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Environmental Assessment

Suppression of Southern Pine Beetle on the Shoal Creek Ranger District of the Talladega National Forest

Shoal Creek Ranger District, Talladega National Forest
Calhoun, Cleburne, Clay, and Cherokee Counties, Alabama

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SUMMARY

The Talladega National Forest proposes to suppress southern pine beetle (SPB) infestations to protect current and future habitat for the red-cockaded woodpecker (RCW). The project area includes all pine and pine-hardwood stands, suitable for timber production, on the Shoal Creek Ranger District excluding the Dugger Mountain Wilderness on the Talladega National Forest, Alabama. This action is needed, because the southern pine beetle is the most destructive insect pest of pine forests throughout the Southern United States. While there is not a current infestation, analysis of how to respond for when the next infestation occurs, will allow for prompt suppression efforts to take place without delay.

The action proposed by the Forest Service to meet the purpose and need is a combination of treatments along with integrated pest management. The proposed action includes the following activities: 1. Cut and Remove, 2. Cut and Leave, 3. Cut and Spray, 4. Cut, Pile, and Burn, and Site prep and replant SPB spots with appropriate species. (ex. Longleaf pine).

All of these treatments would not be carried out on a single SPB spot, but all of the treatment options need to be analyzed for their effects as we can not predict the exact location where a SPB outbreak will occur. The treatment to use on a given SPB spot would be a site specific decision made once a SPB spot has been identified.

The integrated pest management (IPM) includes the aforementioned treatment actions as well as other activities. Included in the IPM is 7,092 acres of host species covered under the Forest Health and RCW Initiative EIS which involves restoring sites to longleaf pine and thinning other pine stands. Thinning will aid in reducing SPB threats by opening the canopy and minimizing the stress of an overstocked stand. Restoring sites to longleaf pine helps the situation, because longleaf pine is less susceptible to SPB attack and it also removes the off site loblolly pine which was already stressed.

In addition to the proposed action, the Forest Service also evaluated the following alternatives:

- The No Action alternative was also considered. Under this alternative there would be no treatment occurring after a SPB spot was identified. The trees would remain standing and the SPB spot would spread until the SPB ran out of host species and stopped on its own. The 7,092 acres of thinning and restoration treatments covered in the Forest Health and RCW Initiative EIS would still occur.
- The No Herbicide Alternative was also considered. Under this alternative, the suppression methods would be the same as the proposed action. However, there would be no use of herbicides in the site prep or release of regenerated stands.

Based upon the effects of the alternatives and the given purpose and need, the responsible official will review the proposed action and the other alternatives in order to make the following decisions:

1. Whether the proposed action will proceed as proposed, as modified by an alternative, or not at all?

If it proceeds:

2. What mitigation measures and monitoring requirements will the Forest Service apply to the reconstruction?
3. Whether the project requires a Forest Plan amendment?

INTRODUCTION

The southern pine beetle is a natural part of the southern pine ecosystem. Population cycles for this forest pest vary greatly from small populations that attack a lone lightning struck or damaged tree to epidemic populations, which have the potential to kill all the trees on large, forested stands. Over the course of history, epidemics have generally occurred about every 7 – 10 years.

Prior to European settlement, contiguous pine forest encompassed more than 90 million acres in the southeastern United States. At that point in history, a southern pine beetle outbreak which killed thousands of acres, had relatively minimal impact on the resource as a whole. Today, with much of the southeastern United States being segmented by roads, development, and small private land owners, such an outbreak would have a much greater impact in a given area. The National Forests and National Parks are the leaders in meeting the need for long rotation, late seral forests, as most commercial and private forests are managed on a short rotation. Due to this constraint on the resource the potential tree mortality associated with a southern pine beetle outbreak that is left uncontrolled is unacceptable to most of the public. In light of this, the Shoal Creek Ranger District of the Talladega National Forest has conducted an analysis of the potential benefits and effects of suppression of southern pine beetle and restoration so that immediate action may be taken when an infestation occurs. This environmental assessment documents that analysis.

Document Structure

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four parts:

- *Introduction:* The section includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- *Comparison of Alternatives, including the Proposed Action:* This section provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- *Environmental Consequences:* This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by

significant issues. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.

- *Agencies and Persons Consulted:* This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- *Appendices:* The appendices provide more detailed information to support the analyses presented in the environmental assessment.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Shoal Creek Ranger District Office in Heflin, Al.

Background

The Southern Pine Beetle (*Dendroctonus frontalis*) has long been recognized as the most destructive pine insect pest in the Southeastern United States. The earliest accounts of SPB infestation date to the 1750's when Morovian settlers in North Carolina reported the loss of many pines near the settlement of Hope. During the early 1800's, South Carolina plantation owners reported widespread losses of pines. Several outbreaks of SPB were reported during the 19th century from Southern Pennsylvania to the Piedmont of the Carolinas. Between 1882 and 1985, twenty SPB epidemics were recorded in the southeastern United States. These epidemics have lasted from one year to five years in duration. The epidemic of 1971 through 1976 ranged over the entire South and destroyed over six million cords of wood (6MMBF).

It is important to recognize the total impact of southern pine beetles to the limited public lands available for multiple-use management in the Southern Region. Southern pine beetles have the potential to significantly alter a forest and negatively impact the recovery efforts for endangered species, particularly the Red-cockaded woodpecker. On National Forests in Texas in 1986, an uncontrolled southern pine beetle infestation occurred on National Forest lands. Within a year, a single spot grew to over 10,000 acres. Essentially, nature created a 10,000 acre cutover. This small spot grew irregardless of property lines and affected the timber of private landowners. In addition, habitat and colonies for the endangered red-cockaded woodpecker were also lost.

In recent years, southern pine beetles have attacked pines in Kentucky, Tennessee, and Alabama. The National Forests in Alabama have lost the natural and native pine component on 20,000 to 30,000 acres. In Kentucky, the small, residual population of red-cockaded woodpeckers was lost along with their habitat. Although, the range of this endangered species has been significantly reduced, it is unlikely that this species could be returned to its natural range in Kentucky, even with significant effort over a lifetime. These epidemics if left untreated or responded to slowly are completely contradictory to the objectives of the Endangered Species Act.

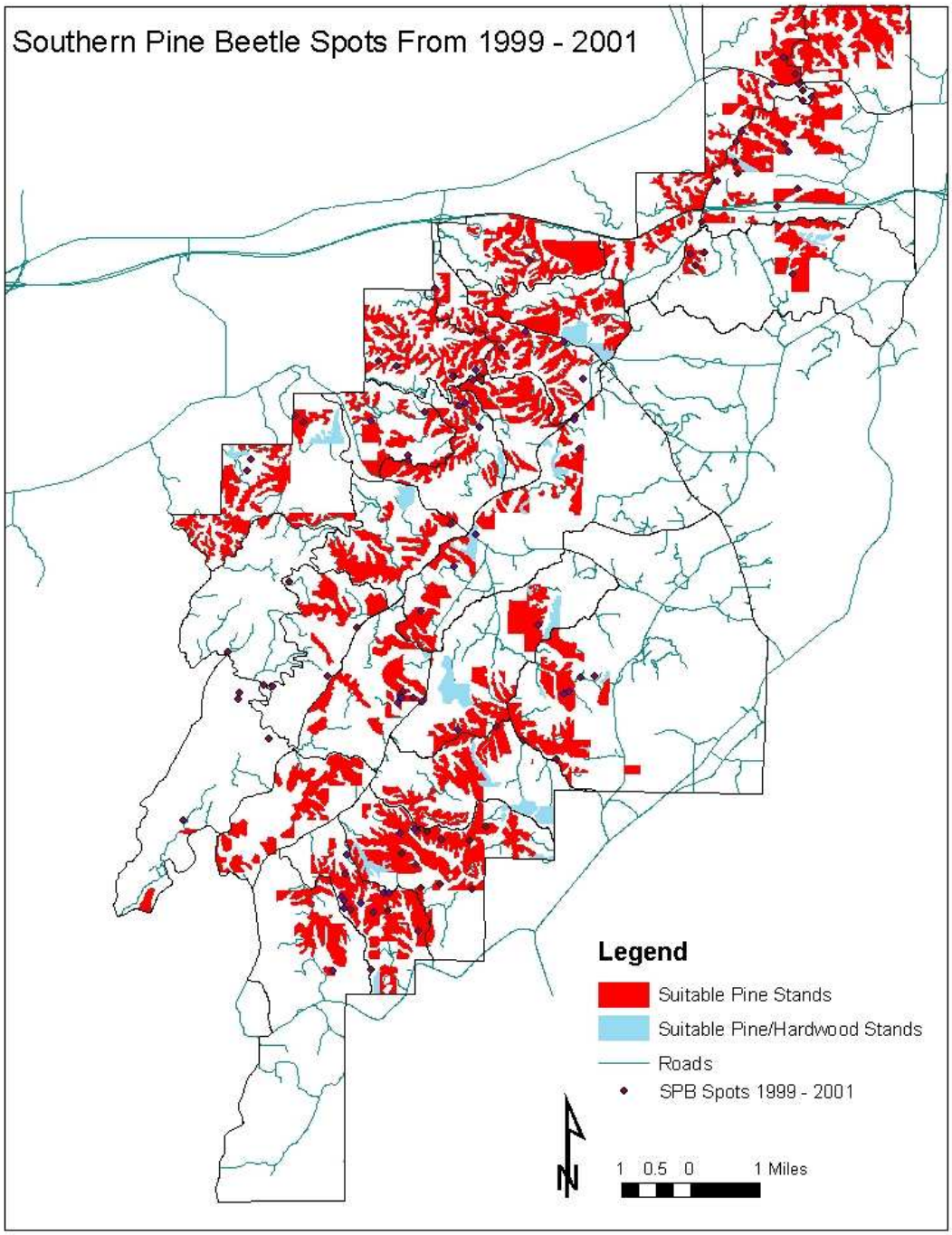

Figure 1 – Southern Pine Beetle spot locations which occurred during the period of 1999 – 2001 on the Southern portion of the Shoal Creek Ranger District.

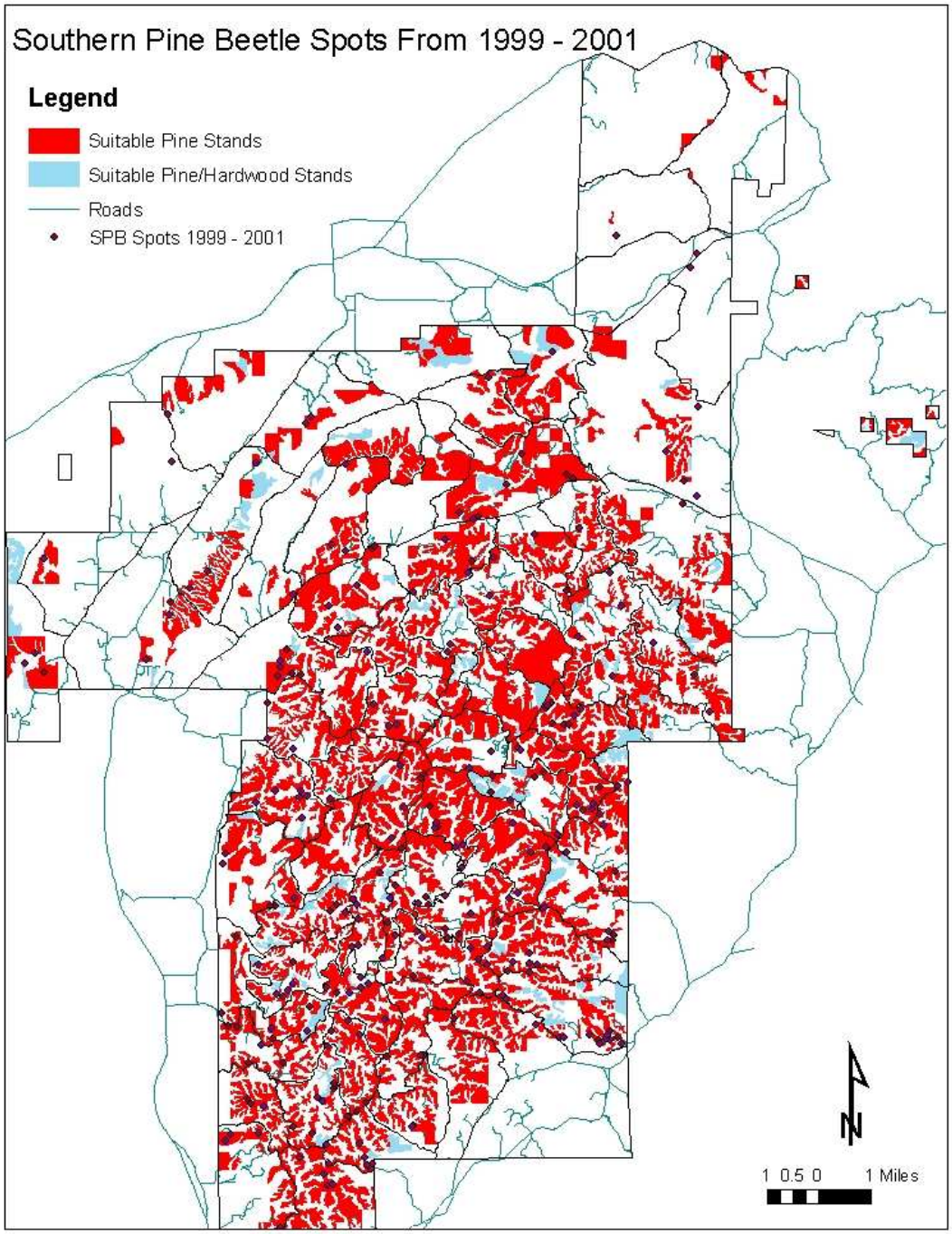

Figure 2 – Southern Pine Beetle spot locations which occurred during the period of 1999 – 2001 on the Northern portion of the Shoal Creek Ranger District.

In relatively low numbers (endemic populations), it normally attacks stressed or dying trees, or trees already infested by other species of beetles. During the outbreaks (epidemic populations), it attacks, colonizes, and kills even the most healthy pines. All species of pines are at risk, but

loblolly and shortleaf pine are most susceptible. Tree mortality is caused by massive disruption of the cambium (growing) layer.

Mature beetles are reddish brown to black and are smaller than a grain of rice. During infestation, adults bore S-shaped egg galleries in the inner bark: after pupation, new adults emerge through the bark, vacate the host tree, and spread to others. At maximum growth, they can complete one generation cycle in about a month. Each generation can produce a ten-fold increase in total numbers. During peak outbreaks, beetles within a "spot" of 100 trees can kill an additional 100 to 200 trees within 30 days.

Major outbreaks last from three to five years and occur in irregular cycles of seven to ten years; the SPB is almost always in outbreak status somewhere within its range in the Southeast. Since 1994, SPB activity has fluctuated both in the level of activity and the location of the hardest hit district on the Talladega National Forest. While other districts on the Talladega National Forest have been harder hit than the Shoal Creek, SPB activity is expected to increase overall with the coming of warmer summer months. In some years, activity has continued almost throughout the entire year. Mild winters, ice storms, tornadoes and other severe weather can all affect the severity and length of outbreak.

Purpose and Need for Action

The total impact of southern pine beetles is more than just the number of trees killed or the number of spots needing salvaging. The total impact involves so much more. There are spots that are too small or inaccessible to salvage, and then there is the additional investment to regenerate the damaged stand to provide habitat. In addition, there is the negative impact on critical habitat for endangered species, which takes a long time to replace, if it ever is replaced.

There is a direct impact on species with special habitat requirements. Many cavity trees in red-cockaded woodpecker cluster sites have been lost due to southern pine beetle outbreaks. In 1995, an estimated 5000 acres of potential red-cockaded woodpecker forage was lost in a single year. It is reasonable to estimate an annual loss of 600-700 acres of red-cockaded woodpecker habitat. As the age class of many of the Forest's pine stands continues to increase, the potential for significant loss in public investment (timber volume) and habitat also increases. Therefore, the need for rapid and aggressive suppression activities increases if the National Forest resources, which are managed for the public benefit, are to be protected.

The purpose of this initiative is to protect existing and future RCW habitat and maintain healthy forests, by reducing losses of pine trees through active Integrated Pest Management. In addition, this action is necessary to minimize visual impacts, as well as impacts to recreational opportunities, wildlife, soil and water. Without this action there is the potential for a SPB infestation to spread from Federal land to adjacent private lands and cause tremendous loss of habitat as well as revenue loss from damaged timber. This action responds to the goals and objectives outlined in the Revised Land and Resource Management Plan (January 2004), and helps move the project area towards desired conditions described in that plan (p 2-10). Action is necessary to follow Goal 3 and Forest Wide Standard 6 of the Revised Land and Resource Management Plan (January 2004).

The Record of Decision for the Final Environmental Impact Statement for the Suppression of the Southern Pine Beetle also directs control of southern pine beetle infestations. Special consideration is given to control activities in or near red-cockaded woodpecker colony sites and

in wilderness areas. However, under the "Rationale for Decision" in that document, an analysis of data detailed in Appendix B of that document indicates that both spot proliferation and spot growth are more likely to be reduced by control measures, than if left uncontrolled. This data supports the need for the proposal to reduce the loss of National Forest timber and critical red-cockaded woodpecker habitat and colony sites.

The Revised Land and Resource Management Plan states that management will be based on Sections 3 and 4 of the Record of Decision of the Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region also provides specific guidelines for protection of habitat from southern pine beetle infestations. The stated purpose of these guidelines is to: "Minimize the potential impact of the southern pine beetle through thinning and prompt control actions." Section 4 of this document sets foraging and regeneration standards and states that the successful regeneration, growth, and development of adequate numbers of pine trees are essential to providing red-cockaded woodpecker habitat in the long-term. Sparse and non-stocked areas are also identified for regeneration to provide this habitat. This document encourages and emphasizes the restoration of preferred habitat species – specifically longleaf pine, when regenerating within habitats suitable for the red-cockaded woodpecker.

Currently there are numerous acres of off-site loblolly pine which are under extra stress because of growing under less than ideal conditions. This extra stress makes these stands even more vulnerable to SPB attack. Once an outbreak begins, the possibility exists for a tenfold increase in numbers within each generation and as many as seven generations per year in parts of the South (SPB EIS Vol. 1, p. 1-8).

The Shoal Creek Ranger District has 60,551 acres of pine and pine-hardwood forest cover type (susceptible host type). These acres are as follows:

5,912 acres of pine/hardwood

13,298 acres of longleaf pine

25,947 acres of loblolly pine

9,854 acres of shortleaf pine

5,540 acres of Virginia Pine

The identification of exact locations of SPB outbreaks is impossible to predict, other than identifying locations where the host species exist. The goal of this analysis process is to determine the effects from the specific proposed actions necessary for control of SPB in pine stands. Part of this analysis will include identifying areas to be excluded from treatments, such as the Dugger Mountain Wilderness. This analysis process will enable a plan to be established which will set forth any types of site specific analysis required when an outbreak does occur.

Desired Future Conditions

The long-term desired condition for the Suppression of Southern Pine Beetle Project consists of the following:

- Evaluation of southern pine beetle spots for suppression needs would occur within 6 days of detection.

- Southern pine beetle spots would be suppressed within 21 days of identification to achieve a forest with minimum losses at the end of the infestation season.
- Critical red-cockaded woodpecker habitat would be replaced as rapidly as possible. Within two years, stands would be regenerated with suitable species to include reestablishing pine types on pine sites within the red-cockaded woodpecker habitat management area. Where a cavity tree is lost to southern pine beetles, it would be replaced with artificial cavities installed in adjacent trees.
- The longleaf-mixed pine ecosystem would be reestablished on suitable sites.
- Hardwood components would be enhanced on suitable locations where pines "homesteaded" historic hardwood sites following agricultural use.
- Public values would be recovered to the extent reasonable, within the limitations of protecting soil and aquatic resources.

Proposed Action

The Shoal Creek Ranger District proposes to suppress southern pine beetle spots and restore damaged areas to suitable forest types using the following methods. Currently, this applies only to areas of the District defined as "at-risk" of pine beetle infestations and designated on the "susceptible stands" maps in the EA. However, since we cannot predict exactly where pine beetles will initiate attack, these maps are only the best estimate available of the area "at-risk". The proposed actions will be applied to any and all southern pine beetle infestations occurring on the Shoal Creek Ranger District.

Suppression

Suppression is the process of impeding the further development of a southern pine beetle spot once it occurs. Suppression methods identified in the Revised Land and Resource Management Plan for the National Forests in Alabama are identified as follows:

1. Cut and Remove – The infested trees, plus a sanitizing buffer zone, are cut and removed. Vacated trees do not need to be cut. Mechanized equipment would be utilized. This method is usually associated with selling the timber as salvage and this is also the preferred method of suppression because it is the most effective. The reason for its effectiveness is that the tree is removed from the site and utilized to produce wood products. By removing the tree from the site and cutting up the tree, the life cycle of the southern pine beetle is interrupted and this will prevent future generations of beetles from infesting other trees.
2. Cut and Leave – The infested trees and a buffer zone are felled toward the center of the spot and left on the ground. Vacated trees do not need to be cut. Chainsaw felling if not accessible by road, otherwise mechanized equipment. This method would be applied in unmerchantable stands, remote sites, or stands where commercial treatment could not be applied within 21 days. Southern pine beetles in the early stages of their life cycle die when cut trees overheat as they lie on the ground during the hot summer sun. Southern pine beetles in the late stages of their life cycle are basically unaffected, but may become disoriented due to the large concentration of volatizing turpines emitted by the cut trees and the displacement and dispersion of the insect's pheremones used to orient them

toward newly infested pines. While this method is effective in the summer when felled trees are super-heated by the sun, this method of suppression is less effective than the "cut and remove" or "cut and spray" suppression tactics, which are effective year round and during the entire life cycle of the southern pine beetle.

3. Cut and Spray – infested trees are felled, limbed and cut into workable lengths for spraying. All bark surfaces are sprayed with EPA-approved insecticides. No buffer zone needs to be cut and vacated trees may remain standing. This method of suppression would typically be used in high value areas such as recreation sites or red-cockaded woodpecker colonies. It is mainly effective in small spots, as large active infestation will grow faster than the trees can be treated.
4. Cut, Pile, and Burn – infested trees are cut, piled toward the center of the spot, and burned until the bark is charred. No buffer zone is needed and vacated trees do not need to be treated.

Application of one of these suppression strategies on a given spot would be based upon the following actions:

- Use aerial and ground surveys to locate southern pine beetle infestations. The possibility exists that spots may be found outside of the "susceptible stands" shown on the maps in the EA, due to the difficulty in pre-identifying exactly where pine beetle infestation will occur.
- Evaluate all detected pine beetle infestation sites to determine whether or not to suppress. Suppression may not be necessary on small inactive spots or where there is no threat to high value resources. The inactive spots where no suppression action was taken would be monitored in case the spot became active.
- Utilize "cut and remove" suppression where possible. Trees would be salvaged by commercial sale and removed from the forest. Usually the vacated trees would not be removed unless there was a safety concern.
- Where "cut and remove" suppression can not be utilized, initiate "cut and leave" suppression. This suppression tactic is often used in pine sapling and poletimber stands, stands inaccessible to mechanized equipment, or during periods when market conditions do not support salvage activities and infestations can not be suppressed by "cut and remove" within 21 days.
- If neither of the above methods can effectively be used to suppress a given southern pine beetle spot, then either "cut and spray" or "cut, pile and burn" may be utilized.
- In red-cockaded woodpecker colonies, a Forest Service biologist would be consulted before any treatment of infested trees occurred. The United States Fish and Wildlife Service would also be consulted on spots threatening or affecting nesting trees. During previous epidemics, the Fish and Wildlife Service has determined that the "cut and remove" method was the most successful and least disturbing treatment, even when applied during breeding season.
- Regardless of the suppression method employed, vacated trees adjacent to existing roads or trails would be felled due to the severe safety hazard that these dead trees pose. These stems would be left on site unless the stem is a merchantable component of a "cut and remove" operation.

All of these treatments would not be carried out on a single SPB spot, but all of the treatment options need to be analyzed for their effects as we can not predict the exact location where a SPB outbreak will occur.

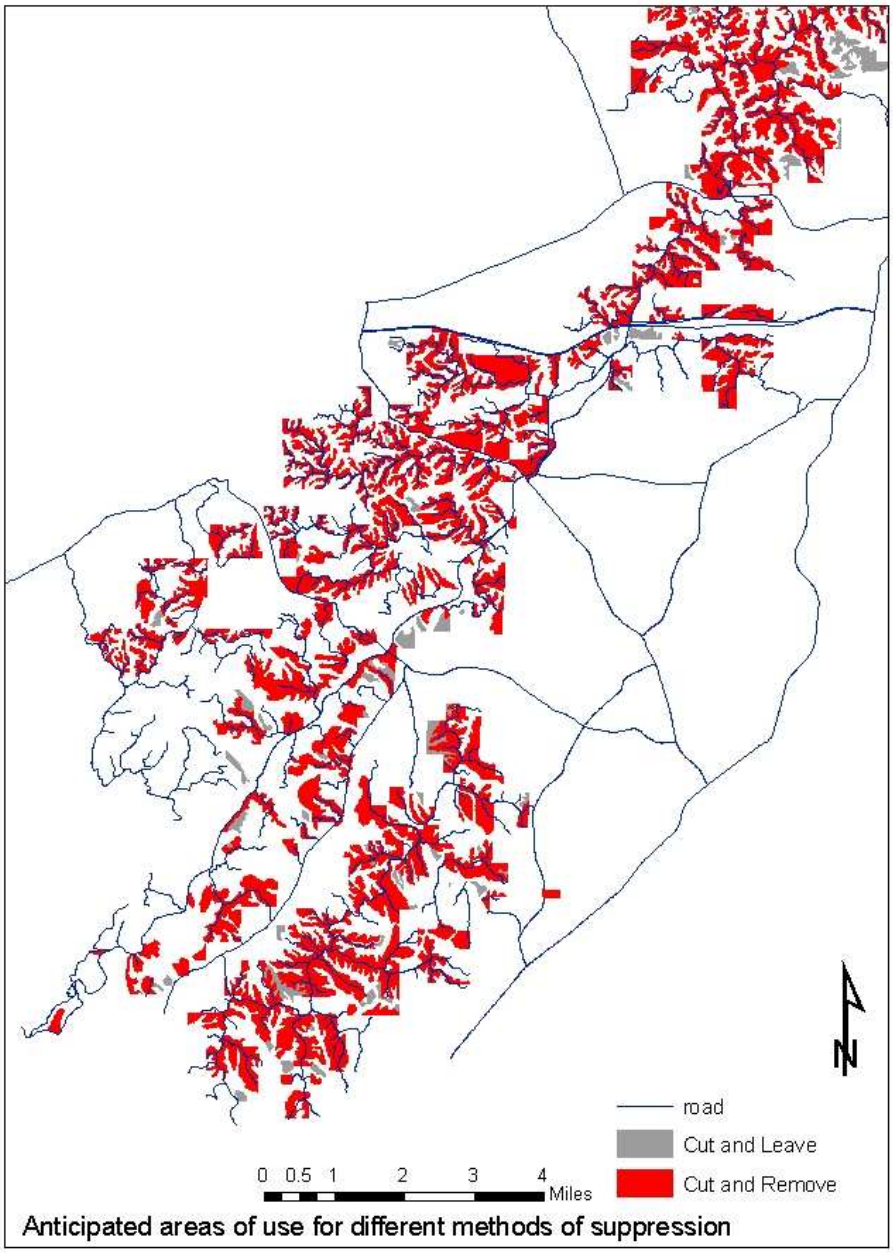

Figure 3 – Anticipated areas of use for the different methods of SPB suppression on the Southern portion of the Shoal Creek Ranger District.

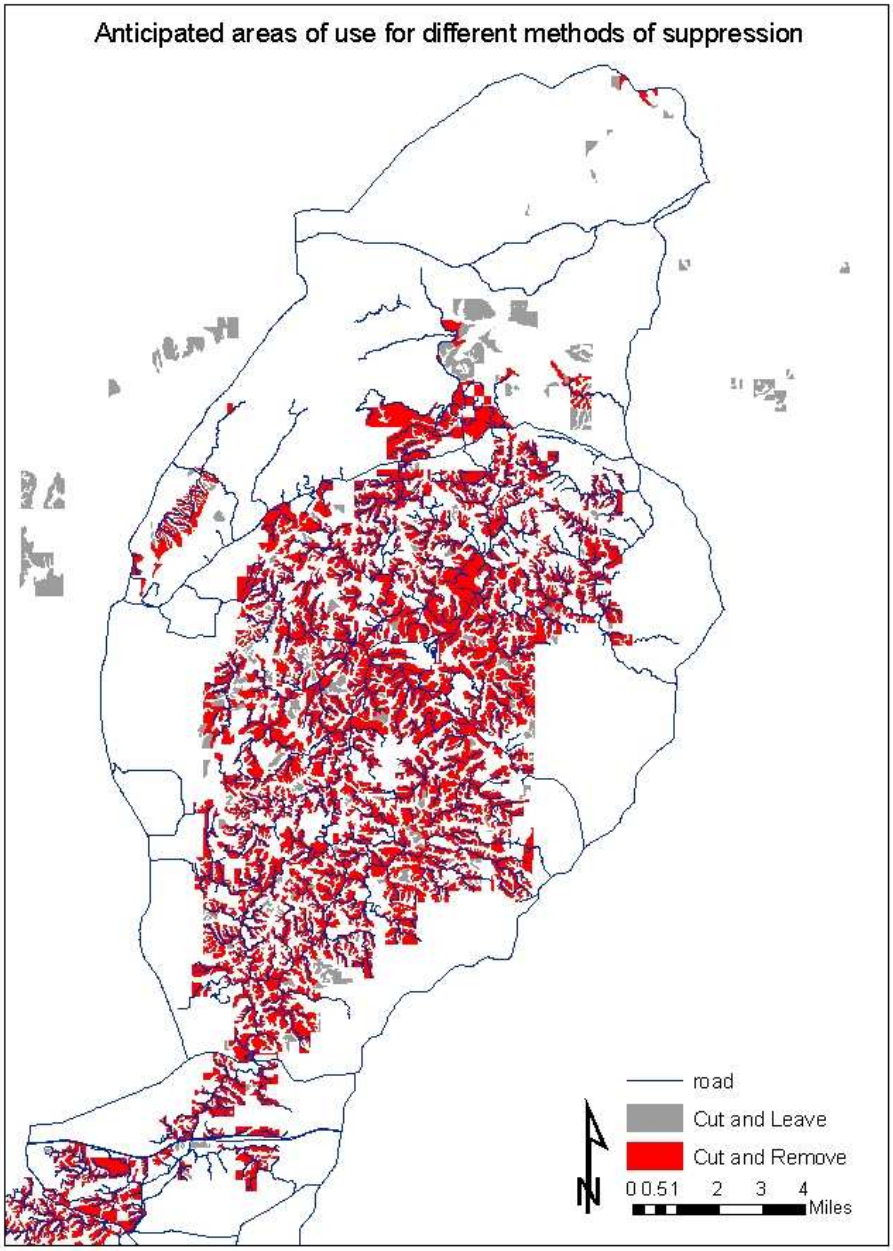

Figure 4 – Anticipated areas of use for the different methods of SPB suppression on the Northern portion of the Shoal Creek Ranger District.

Restoration

The purpose of restoration is to reestablish historic or appropriate forest communities. Restoration activities are necessary because natural processes such as fire have been disrupted by

roads, private inholdings, and the need to provide for public safety and the protection of private property. The goal of restoration is to insure that damaged sites are returned to the appropriate forested condition as quickly as possible. The National Forest Management Act requires that regeneration suitable to the site be reestablished within 5 years.

Restoration will likely vary based on the current conditions of a specific site. The following is a decision framework for the management activities to be applied to southern pine beetle spots.

1. All pine and pine-hardwood spots averaging 1 acre and larger (1/2 acre and larger within the red-cockaded woodpecker habitat management area) would be evaluated for restoration needs.
2. Sites that are 1 acre and larger or pine sites that are ½ acre and larger in red-cockaded woodpecker habitat management areas would be site-prepared and regenerated as needed. To do this, the following criteria would be used:
    - Soil/site relationships and not prior forest structure should determine management objectives. Maps depicting possible restoration opportunities for longleaf/mixed-pine and pine-hardwood/hardwood are located in the EA. A field examination for site specific determination of suitable species will be conducted prior to restoration implementation.
    - Hardwood sites where sparse pines are removed and sufficient hardwoods remain to occupy the site would be not be treated. Over time, the hardwoods would expand to occupy the locations vacated by lost pines.
    - Hardwood sites occupied predominately by pine, but with adequate hardwood rootstock to regenerate naturally would be site-prepared and allowed to revert naturally to hardwood. This situation would typically occur on an old field site which regenerated to pine after they were abandoned, and have experienced an in-growth of hardwoods over time.
    - Pine sites would be site-prepared and regenerated to pine. Longleaf pine would be established on suitable sites in an effort to restore this ecosystem to its appropriate range.
3. Longleaf pine would be planted on suitable sites where pines were desired and burning was a part of the management regime.
4. A site-specific field examination would occur at a given site once the suppression activities are complete, to determine if and which site preparation techniques would be utilized. The intention of site preparation would be to regenerate the site to the appropriate ecosystem by treating vegetation that would inhibit the development of the new stand.
   Sites with excessive vegetation competition would be site prepared by injection and foliar spray. Saw-and-stump spray and foliar spray would be substituted in spots adjacent to roads where visual management mitigation is a high priority. Tree injection, saw-down, and foliar spray would be used in hardwood and pine hardwood areas. Chapter 3 contains a listing of proposed herbicides and treatment rates by application method.
5. Prescribed burning would be used as a follow-up treatment on all sites.
6. Release / precommercial thinning would be planned on all pine and pine-hardwood sites.

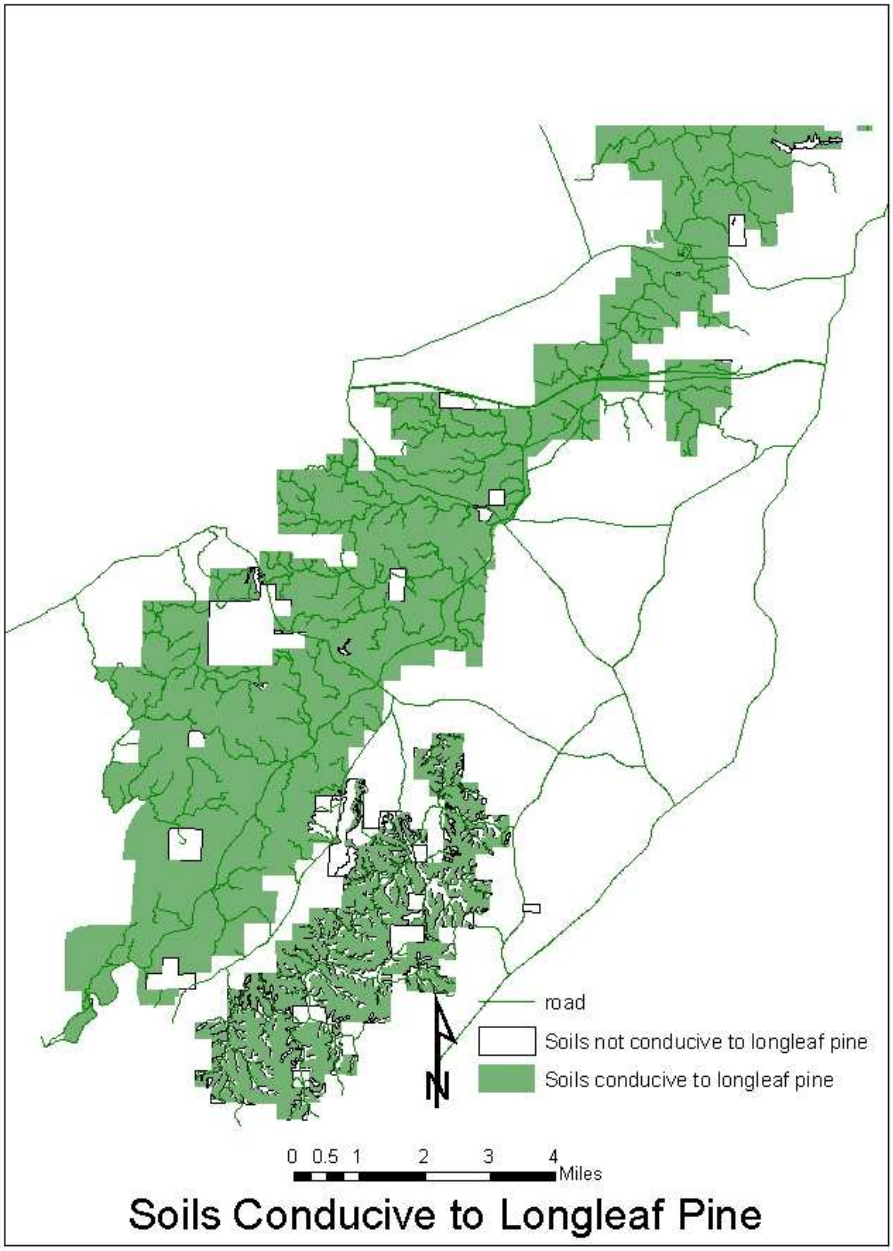

Figure 5 - Soils Conducive to Longleaf Pine on the Southern Portion of the Shoal Creek Ranger District.

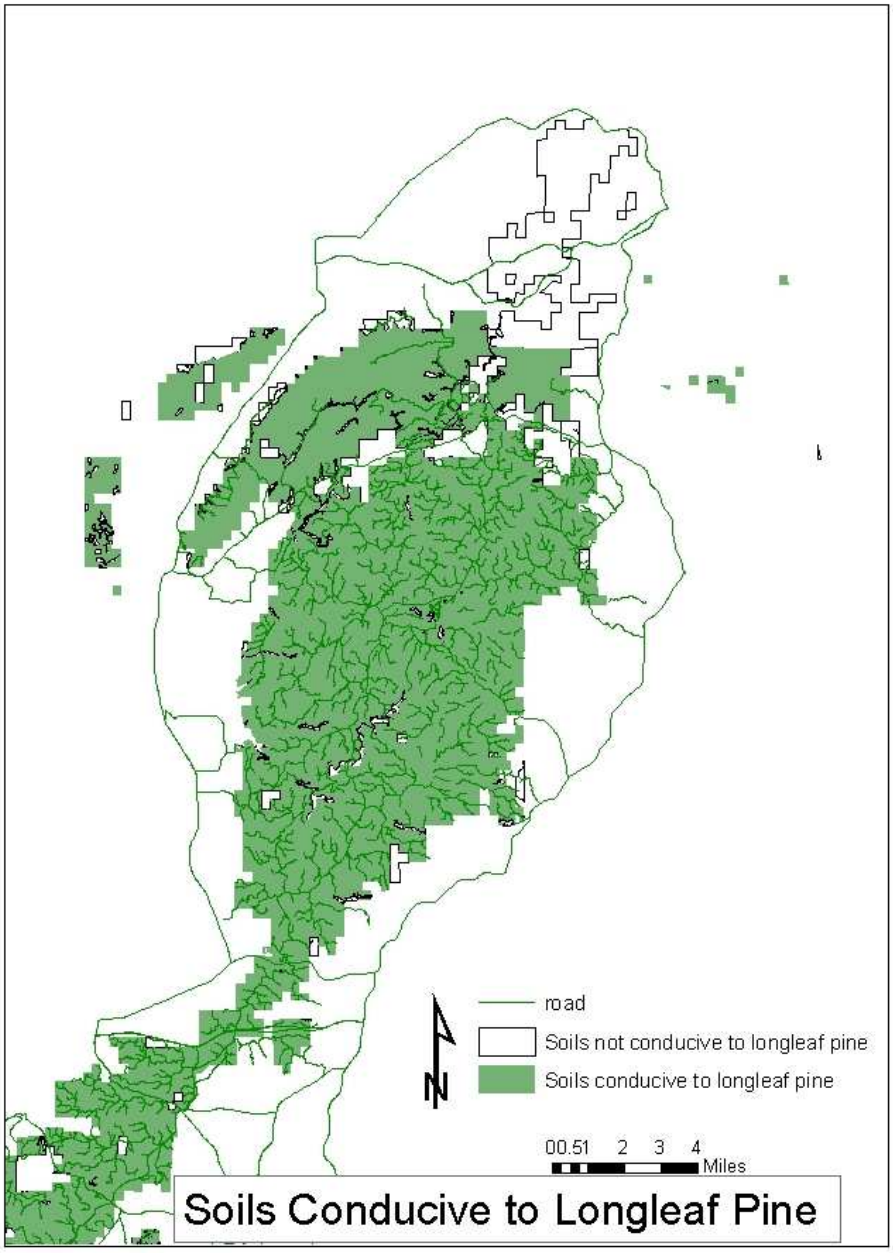

Figure 6 - Soils Conducive to Longleaf Pine on the Northern Portion of the Shoal Creek Ranger District.

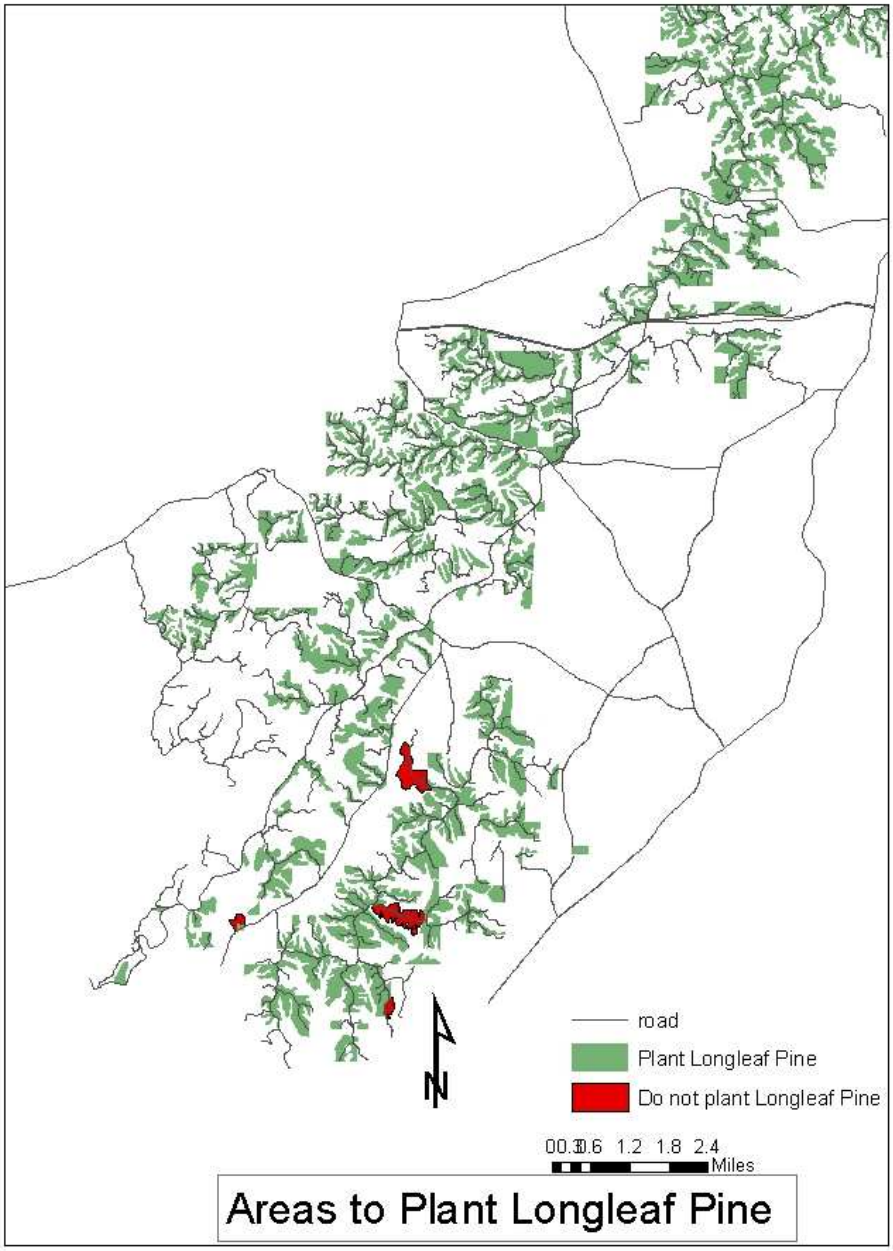

Figure 7 - Areas that could potentially be reforested to Longleaf Pine on the Southern Portion of the Shoal Creek Ranger District.

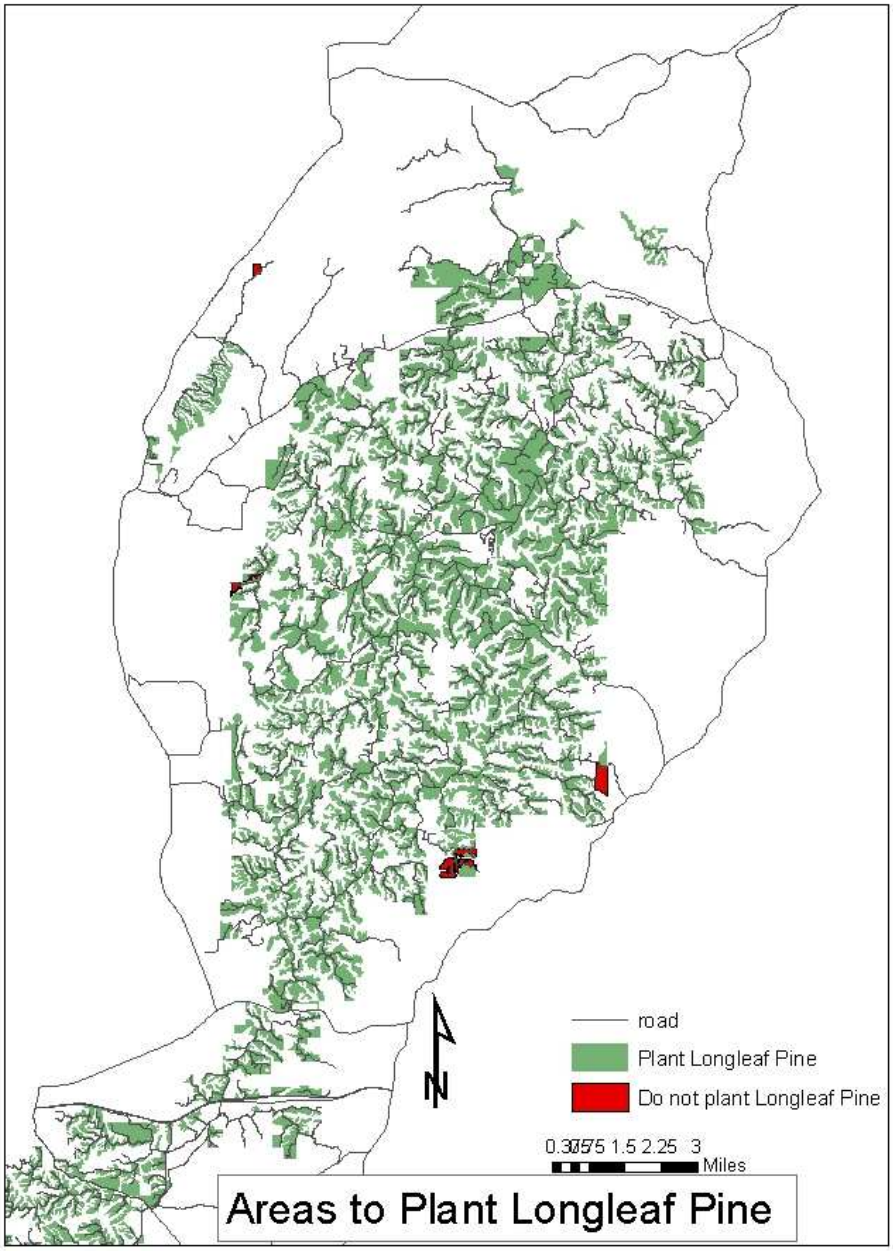

Figure 8 - Areas that could potentially be reforested to Longleaf Pine on the Northern Portion of the Shoal Creek Ranger District.

Decision Framework

Given the purpose and need, the deciding official reviews the proposed action and the other alternatives in order to make the following decisions:

1. Whether or not to control southern pine beetle infestations using the methods described in this document and applying the mitigating measures analyzed in this document. On site evaluations would be required to determine the need and/or method of treatment.
2. Whether or not to take action to regenerate sites using the methods described in this document and applying the mitigating measures analyzed in this document. On site evaluations would be required to determine the need and/or method of treatment.
3. What methods and actions are appropriate to site-specific conditions where infestations occur.

Public Involvement

The proposal was listed in the Schedule of Proposed Actions on March 30, 2007. The proposal was provided to interested public and other agencies on the mailing list for comment in a scoping letter on May 11, 2007. In addition, as part of the public involvement process, the scoping notice was published in the Anniston Star on May 16, 2007. A copy of the scoping letter and mailing list can be found in Appendix C and the project file respectfully. Comments can be found in Appendix C of this document.

Using the comments from the public, other agencies, and interested parties, the interdisciplinary team developed a list of issues to address.

Issues

The Forest Service separated the issues into two groups: significant and non-significant issues. Significant issues were defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)…" A list of non-significant issues and reasons regarding their categorization as non-significant may be found in the project record.

As for significant issues, the Forest Service has not identified any issues during internal or external scoping.

ALTERNATIVES, INCLUDING THE PROPOSED ACTION

This chapter describes and compares the alternatives considered for the Suppression of Southern Pine Beetle on the Shoal Creek Ranger District of the Talladega National Forest project. It includes a description and map of each alternative considered. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon the design of the alternative (i.e., "cut and remove" versus no action) and some of the information is based upon the environmental, social and economic effects of implementing each alternative (i.e., the amount of erosion resulting from "cut and remove" versus the no action alternative).

Alternatives

Alternative 1

No Action

Under the No Action alternative, current management plans would continue to guide management of the project area. No suppression treatments would occur, nor would site prep and replanting occur. Sites would have no management activity occur, and would be regenerated through natural succession. The trees would remain standing and the SPB spot would spread until the SPB ran out of host species and stopped on its own. The 7,092 acres of thinning and restoration treatments covered in the Forest Health and RCW Initiative EIS would still occur. These thinning activities will aid in reducing SPB threats by opening the canopy and minimizing the stress of an overstocked stand. Restoring sites to longleaf pine helps the situation, because longleaf pine is less susceptible to SPB attack and it also removes the off site loblolly pine which was already stressed.

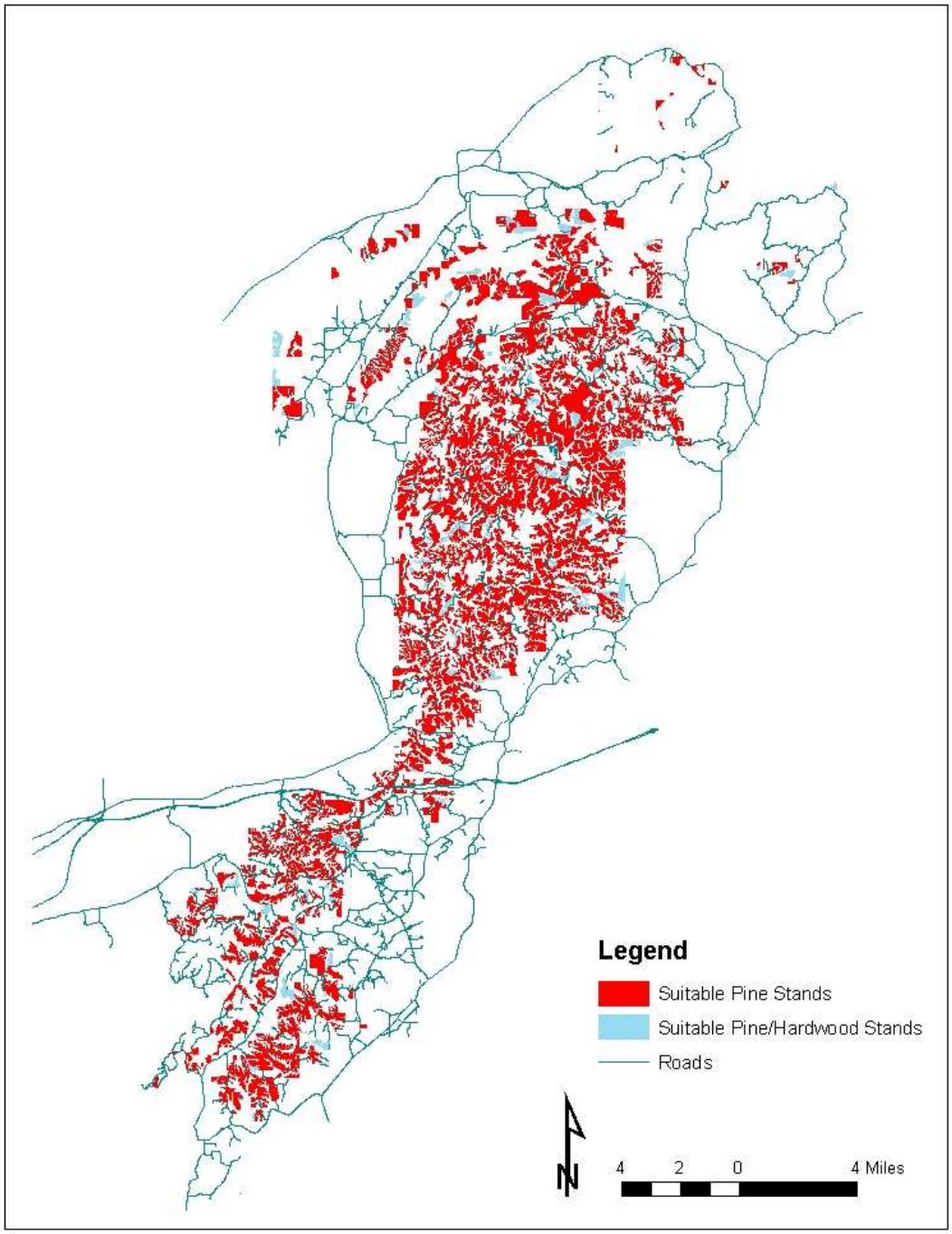

Figure 9. Suitable Pine and Pine-Hardwood Stands on the Shoal Creek Ranger District.

Alternative 2

The Proposed Action

The activities included in the "Proposed Action" were described in Chapter 1. Analysis of these activities and an explanation of how they respond to the issues developed for this project are discussed in Chapter 3.

Alternative 3

The No Herbicide Alternative

Under this alternative, although suppression would occur as outlined in Alternative 2, the chemical site prep and release treatments would not occur. This alternative was dismissed from further consideration because it does not meet the purpose and need (as stated in Section 1.3 of this EA) of establishing overall favorable habitat for the RCW on the Forest and complying with the provisions of the ESA, and the direction established in the Revised Land and Resource Management Plan for the National Forests in Alabama (2004). Without habitat management and restoration, the stands will not become suitable habitat for the Red-cockaded woodpecker in the future. Therefore, this alternative was dismissed from further consideration.

Mitigation Common to All Action Alternatives

In response to public comments on the proposal, mitigation measures were developed to ease some of the potential impacts the various alternatives may cause. Numerous mitigation measures will be utilized during this project. Many of these mitigation measures are found in the Revised Land and Resource Management Plan (RLRMP) for the National Forests in Alabama. Mitigation measures in relation to scenery impacts are found on pages 2-59 through 2-60 and pages 3-24 through 3-34. Mitigation measures to protect recreational resources are also found on pages 2-55 through 2-57 and pages 3-24 through 3-34 of the RLRMP. At a minimum State Best Management Practices will be implemented to meet water quality objectives. Standards in the RLRMP that exceed State BMP's will take precedence (RLRMP 2-14 through 2-27).

In accordance with the Cultural Resources Treatment Plan for the Southern Pine Beetle Salvage Program for the National Forests in Alabama, each SPB spot will be surveyed upon detection. Special contract provisions such as, "Protection Measures needed for Plants, Animals, Cultural Resources, and Cave Resources" (BT6.24), "Protection of Special Areas" (CT6.22), and "Site Specific Special Protection Measures" (CT6.24), will be included in any salvage operation contracts to ensure protection of resources. The results of the surveys will guide the decision for which treatment option in the proposed action to implement. The main factor will be impacts of ground disturbance in these areas.

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 1. Comparison of Alternatives.

	No Action	Proposed Action
Water Quality	No stream crossings and no road system road construction will occur.	No stream crossings and no system road construction will occur.
Wildlife	Potential for RCW habitat loss.	Potential to limit negative impacts to RCW habitat. Restoration would begin the process to reestablish habitat destroyed by the SPB.
Heritage Resources	No impact	Surveys of SPB spots will show location of resources to be protected through mitigation measures.
Herbicide Use	No impact	If and when an approved chemical becomes available for use, its use will be evaluated on a case by case basis.
Scenary	Large areas of standing dead timber may become visible.	Depending on the scenary objectives of the area in which a SPB spot occurs, mitigation will take place to minimize visual impacts of cutting down the infected trees.
Soils	Baseline impacts both good and bad will continue.	Some short term erosion can be expected from skid trails and roads. Minimal nutrient loss and compaction is expected, especially if spots are relatively small.

ENVIRONMENTAL CONSEQUENCES

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for comparison of alternatives presented in the chart above.

3.1 Scenery

3.1.1 Issues

Southern Pine Beetle (SPB) infestations occur at the discretion of the beetles; therefore, the decision is simply to either attempt to mitigate beetle damage or not attempt to mitigate. The landscape character goals for the Shoal Creek Ranger District range from natural appearing, natural evolving, pastoral, cultural, historic, and urban. The preponderance of Shoal Creek land has a natural appearing landscape character goal, but the district does include Dugger Mountain Wilderness and the Blue Mountain Backcountry Area, which have natural evolving landscape character goals. SPB treatments do not fit with natural evolving landscape character goals. Proposed activities in this EA will have both beneficial and adverse effects on scenery depending on the visual values of the viewer. Some or all of the proposed treatments may disappoint forest visitors who place high value on natural evolving landscapes. However, these same treatments are expected to improve most visitors' visual experiences by mitigating or halting the devastation caused by the beetles. The Forest Plan identifies levels of necessary visual protection. These levels are classified by assigning a scenic integrity objective (SIO) to every acre of the forest. The SIO is either: 1. very high, 2. high, 3. moderate, or 4. low. An SIO of low permits more deviation or visual change on the land as compared to an SIO of high.

3.1.2 Affected Environment

The affected environment potentially includes the entire 116,978 acres of the Shoal Creek Ranger District plus adjacent private land with views into the Forest.

The Shoal Creek Ranger District may be described by referring to descriptions of its physiographic section as described by Bailey and others. The Shoal Creek is part of Southeastern Mixed Forest Province, Southern Ridge and Valley Section and the Southern Appalachian Piedmont Section. Distinctive, common, and undistinguished examples of these sections occur.

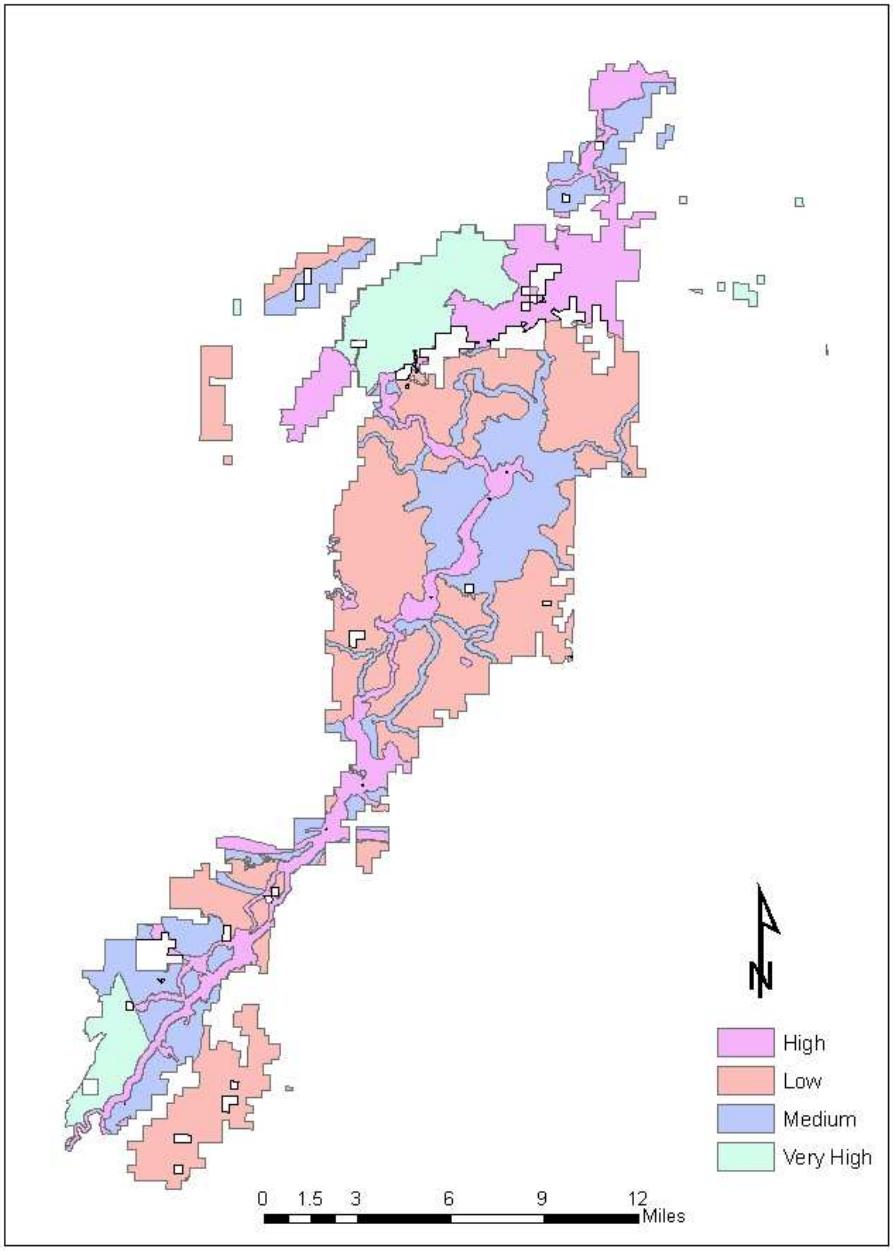

Figure 10 Scenic Integrity Objectives for the Shoal Creek Ranger District.

The forest is generally covered with an almost continuous canopy of soft to medium textured rounded tree forms, creating a natural-appearing landscape character. However, since the late

1990s, as a result of the Southern Pine Beetle infestation that killed large numbers of introduced and native pines, significant parts of the canopy have opened. Groups of tall, gray, defoliated stems, generally varying in size from less than an acre to major openings litter the area. Private land inside the proclamation boundary is mostly agriculture or forest.

Landscape character is described as the particular attributes, qualities, and traits of a landscape that give it an image and make it identifiable or unique. Landscape themes refer to the general focus or subject of variations on landscape character settings. They may be thought of as detailed descriptions of desired landscape character. Themes range from a natural to an urban landscape. Shoal Creek landscapes are predominantly Natural Appearing.

Dugger Mountain is the only designated wilderness included in the Shoal Creek Ranger District. The only other Natural Evolving landscape on Shoal Creek is the Blue Mountain Area. Rural-Forested is a very small category that includes places like the highly developed recreation area at Coleman Lake.

Cultural features are present, often obvious, and represent the varied peoples who have lived and used the land now known as the Shoal Creek Ranger District. Bankhead and Horseblock Fire Towers are two examples existing on the Forest. Churches and cemeteries are found on the adjacent private lands. Shoal Creek Church near Coleman Lake is an outstanding example. Many of these features on and off national forest have become special places requiring appropriate visual settings.

The scenic resources of the Shoal Creek Ranger District are managed in accordance with the Revised Land and Resource Management Plan and the publication Landscape Aesthetics, A Handbook for Scenery Management, Agricultural Handbook Number 701 published 1995. Scenic Integrity Objectives (SIOs) are established by the Revised Land and Resource Management Plan.

3.1.3 Environmental Effects

Alternative A (No Action)

This alternative will not immediately affect visual resources. As time passes, natural processes or other management will change the visual character of the forest. The natural process changes are expected to be generally pleasing to most, provided no catastrophic insect, disease, or storm events occur. Even these potential occurrences would be acceptable to a portion of forest visitors. However, conditions are such that catastrophic beetle attacks are not only a possibility, they are expected. The loblolly stands in decline will continue to fail, and also, the chance to speed up the healing of beetle scared forests will be missed. This alternative does nothing to provide direction for protecting the existing forest from devastating beetle attacks. This is expected to be a visual disaster for most.

Alternative B (Proposed Action)

Manipulating the environment in order to achieve the desired future conditions will certainly affect landscape character. The visual short-term effects from traditional logging are expected to be negative; however, the long-term effects of this alternative are predicted to be positive.

Removing dying or dead off-site loblolly, or other pine is expected to result in healthier, more diverse; and therefore, more visually pleasing forests. Diversity is the antidote for monotony. Fighting southern pine beetle (SPB) attacks is expected to restore forest health quicker than waiting on natural processes.

The visual effects near trails and recreation areas are of consequence even with mitigation measures. Visitors are expected to find the SPB openings visually negative during and immediately after the work. Ultimately, the area will be better off visually after the logging and bug infestation evidence disappears. SPB treatments do not fit with natural evolving landscape character goals.

3.1.4 Mitigation Measures

In beetle infestation areas that are assigned a SIO of low, this alternative is expected to meet the objective provided the listed mitigation practices are accomplished. They include: 1. flowering and other visually attractive trees and under story shrubs are favored when leaving vegetation, 2. the visual impact of log landings is blended so that they remain subordinate to the existing landscape character in size, form, color, and texture, 3. the openings created by the cut boundaries are organically shaped, and 4. Rehabilitate any physical effects on trails.

In beetle infestation areas that are assigned a SIO of moderate, this alternative is expected to meet the objective provided the listed mitigation practices are accomplished. They include: 1. flowering and other visually attractive trees and under story shrubs are favored when leaving vegetation, 2. the visual impact of log landings is blended so that they remain subordinate to the existing landscape character in size, form, color, and texture, 3. the openings created by the cut boundaries are organically shaped, 4. Rehabilitate any physical effects on trails, 5. slash is removed, burned, chipped or lopped to within an average of 2 feet high, when clearly visible within 100 feet on either side of travel routes. 6. unit boundary marking is applied so as to not be visible within 100 feet of travel routes, and 7. log landings, roads, and bladed skid trails are located out of view to avoid bare mineral soil observation from concern level 1 travel routes.

In beetle infestation areas that are assigned a SIO of high, this alternative is expected to meet the objective provided the listed mitigation practices are accomplished. They include: 1. flowering and other visually attractive trees and understory shrubs are favored when leaving vegetation, 2. the visual impact of log landings is blended so that they remain subordinate to the existing landscape character in size, form, color, and texture, 3. the openings created by the cut boundaries are organically shaped, 4. Rehabilitate any physical effects on trails, 5. slash is removed, burned, chipped or lopped to within an average of 2 feet high, when clearly visible within 100 feet on either side of travel routes. 6. unit boundary marking is applied so as to not be visible within 100 feet of travel routes, 7. log landings, roads, and bladed skid trails are located out of view to avoid bare mineral soil observation from concern level 1 travel routes, and 8. stems are cut to within 6 inches of the ground in the immediate foreground.

In beetle infestation areas that are assigned a SIO of very high, this alternative is expected to meet the objective provided the listed mitigation practices are accomplished. They include: 1. flowering and other visually attractive trees and under story shrubs are favored when leaving vegetation, 2. the visual impact of log landings is blended so that they remain subordinate to the

existing landscape character in size, form, color, and texture, 3. the openings created by the cut boundaries are organically shaped, 4. Rehabilitate any physical effects on trails, 5. slash is removed, burned, chipped or lopped to within an average of 2 feet high, when clearly visible within 100 feet on either side of travel routes. 6. unit boundary marking is applied so as to not be visible within 100 feet of travel routes, 7. log landings, roads, and bladed skid trails are located out of view to avoid bare mineral soil observation from concern level 1 travel routes, 8. stems are cut to within 6 inches of the ground in the immediate foreground, and 9. consult with the Forest Landscape Architect for additional site specific visual mitigation measures.

3.1.5 Cumulative effects

The area analyzed for cumulative visual effects is the Shoal Creek Ranger District as described in the Affected Environment part of this section.

The predominant landscape character of the areas proposed for treatment in the proposed action is natural appearing. SPB treatment will result in natural appearing land staying natural appearing with a healthier forest as a result. Allowing natural processes to create the healing after SPB attack will take much longer.

The proposed action is designed to improve the ecological health of the Shoal Creek Ranger District; therefore, it should ultimately result in better visual settings. However, negative visual effects should be expected during and after the proposed treatments, but this should be no worse than the SPB attacks themselves.

This project supports the visual goals of other district long leaf restoration, red-cockaded woodpecker habitat improvement, and exotic species elimination vegetation management projects.

3.1.6 Monitoring

Forest Landscape Architect will approve, review, and report on all vegetative management activities before, during, and after their occurrence in or near the Blue Mountain 12B Forest Plan Prescription.

Forest Landscape Architect will approve, review, and report on all vegetative management activities in areas with an SIO of high or very high.

3.2 Soils

3.2.1 Issues

No significant issues were identified.

3.2.2 Affected Environment

Soils within the boundaries of the proposed project are located primarily in the Schist Plains, Sandstone, Shale, and Chert Ridge and the Quartzite and Talladega Slate Ridge Subsections.

The Schist Plains Subsection is divided into one Landtype Association (LTA) on the Forest named the Piedmont LTA. The Piedmont LTA is located in the central east portion of the Forest. The Sandstone, Shale, and Chert Ridge Subsection contain one LTA on the Forest named Dugger Mountain. The Dugger Mountain LTA is located north of the town of Heflin. The Quartzite and Talladega Slate Ridge Subsection is divided into four LTAs: Talladega Hills, Horseblock Mountain, Hollins East, and Cheaha Mountain. These four LTAs make up a large portion of the Forest ranging from the town of Heflin south to the town of Sylacauga.

The Piedmont LTA has a geology made up of mica and chloritic schists that weathered into loamy soils containing clay. Land surface form is characterized as upland hills with moderately low relief. Overstory vegetation is primarily pine-oak. The Dugger Mountain LTA has a geology made up of residuum from primarily shale and sandstone interbedded with shale and colluvium primarily from sandstone and shale. Land surface form is characterized as low mountains of moderate relief. Overstory vegetation is primarily oak-pine. The Talladega Hills, Horseblock Mountain, and Hollins East LTAs have geology derived from slate and phyllite. Soils weathered into loamy soils containing silt and clay. Land surface form ranges from upland hills of moderately low relief to moderate relief. Overstory vegetation is pine-oak. The Cheaha Mountain LTA derived from a geology consisting of sandstone and some shale. Soils weathered into sandy soils containing some clay. Land surface is described as low mountains with moderate relief. Overstory vegetation is primarily xeric oak-pine.

An Order 2 Soil Resource Inventory of the Talladega Division, Talladega National Forest at a 1:24,000 scale identified 22 soil map units within the proposed project boundary and are listed below. Seventeen primary soil series are identified within the map units listed below. Inclusions of similar and dissimilar soils can be found within each map unit identified. Maps and soil descriptions are available for viewing at the Ranger Station Office.

Soil Resource Inventory Map Units

Chewacla, State, and Wehadkee Soils, 1-3% slopes, frequently flooded
Fruithurst-Chewacla Complex, 2-30% slopes
Fruithurst-Tallapoosa Complex, 6-15% slopes
Fruithurst-Tallapoosa Complex, 25-40% slopes
Tallapoosa-Fruithurst Complex, 40-65% slopes
Montevallo very channery silt loam, 20-50% slopes
Tidings Gravelly loam, 5-15% slopes
Allen-Chewacla Complex, 2-10% slopes
Allen Cobbly sandy loam, 6-20% slopes
Tidings Gravelly loam, 20-50% slopes
Riverview and State Soils, 1-3% slopes, occasionally flooded
Madison sandy loam, 4-12% slopes
Rion sandy loam, 12-25% slopes
Rion-Louisa Complex, 25-50% slopes
Udorthents, abandoned mineland
Rion-Chewacla Complex, 2-15% slopes
Mecklenburg-Wilkes Complex, 4-15% slopes

Mecklenburg clay loam, 15-30% slopes
Cheaha-Rock Outcrop Complex, 5-15% slopes
Cheaha stony sandy loam, 20-40% slopes
Cheaha stony sandy loam, 40-65% slopes
Cheaha stony sandy loam, 5-15% slopes

The Madison and Rion soils average surface horizons 2 inches thick with subsurface depths 8 inches thick over clayey loam subsoils. Fruithurst and Allen soils average surface horizons 4 to 8 inches thick over loam and silt loam subsoils. Mecklenburg soils have been eroded where no surface soil remains. The subsoil is near or at the surface. The shallow soils, Tallapoosa, Louisa, Montevallo, and Wilkes have surface thickness ranging from none to 4 inches over subsoils consisting of clayey or silty loams. Cheaha and Tidings soils are gravelly loamy soils to depths over 20 inches before soil texture changes to silty clay and clay loams.

3.2.3 Environmental Effects

Disturbance of soils in situ will result in some form of physical, chemical and biological change. Analysis takes into account four types of effects that can occur within soils as a result of SPB suppression (cut and remove, cut and leave, cut and spray, and cut, pile and burn infected trees) and temporary road construction. Direct effects can be the alteration of physical, chemical, and biological properties of the soil resulting from changes in soil organic matter content, erosion of the soil, soil compaction, and nutrient leaching and/or displacement. Indirect effects can be accelerated weathering of the soil, accelerated accumulation of soil in depressional areas, alteration of organic matter formation, and alteration of permeability/water infiltration. Cumulative effects are changes in soil productivity. Changes in productivity can be adverse or beneficial. Changes in soil surface texture (erosion), soil fertility, water storage capacity and water infiltration are key indicators of cumulative effects of soil productivity.

Effects, beneficial and adverse, to the soil resource are presently ongoing without any new proposed projects as a result of past and current land use practices; i.e. timber harvest, recreation trails, and roads or lack of ground disturbing management practices.

Cut and remove infected trees involves ground disturbing activities that can potentially affect the soil resource through nutrient removal, soil compaction and soil erosion. Nutrient removal varies. Grier and others have reported that nutrient loss tends to be proportional to the volume removed and that the greater the proportion of total nutrients present in trees, the greater the potential for site degradation through harvesting. Grier and others also have found that nutrient losses from stem removal in temperate conifer forests are often compensated by natural inputs of nutrients resulting in no loss of long term productivity. Whole tree harvesting removes a greater amount of nutrients and has been found to increase average nitrogen removal rates in some temperate forests by as much as 100 percent. Jorgensen and Wells report that whole tree harvesting on a 16 and 32 year rotation resulted in high nitrogen depletion rates compared to harvesting only the stem. Regardless of rotation age, nitrogen loss is approximately balanced by the nitrogen inputs from fixation and the atmosphere. Roads and skid trails are sites of the greatest nutrient loss since organic matter is removed and the surface soil can be eroded.

Soil compaction affects soil bulk density that can be easily explained as a measurement of the amount of pore space within a soil. McKee and others have broken down soil compaction to be dependent on soil texture, organic matter, and moisture interrelationships. Lighter textured soils (sand) have a higher range in bulk density before affecting tree growth than heavier textured soils (clay). Soil organic matter reduces bulk density. Soil moisture content has a pronounced effect on compaction as it influences soil porosity. Identifying soils by surface texture, maintaining organic matter, and operating equipment when soil moisture is low will reduce the effects of compaction. Concern for soil compaction effecting tree growth occurs on haul roads and skid trails (primary and secondary) as a result primarily from removal of organic matter, erosion, and frequent passes. Erosion can change surface soil texture. This combination added with soil moisture content results in higher than normal soil bulk densities, which in turn reduces water holding capacities and water infiltration.

Soil compaction usually reaches a maximum after as few as three passes by standard (other than specialized /low psi) equipment. Tertiary or skid trails that involve one pass over the ground usually have little to no effect on soil compaction unless site conditions are low in organic matter and saturated with water. Surface debris such as limbs and needles/leaves can play an important role in reducing the potential for soil compaction by supporting equipment weight. Soils susceptible to erosion are those soils exposed to the elements of nature, primarily water from rainfall and landform position where increases in slope steepness increases the erosion hazard. Research observations and many studies (Hewlett, Lull, Reinhart and others) on experimental watersheds have shown that soil erosion is a product more by fire and/or mechanical disturbance than the actual harvest of trees. Monitoring (1988, 1993, 1994) has found soil exposure to occur primarily on roads and skid trails with minor exposure occurring off roads and trails.

Cut and leaving infected trees has the least effects. Nutrient removal, soil compaction and soil erosion would be less. Less ground disturbance can be expected from cut and leave since no extraction of trees off site occurs. Also, use of access roads (temporary and non-temporary) generally involves fewer passes (limited to getting equipment in and out). Leaving trees on site, less ground disturbance and reduced use of equipment on roads reduces the risk for direct and indirect effects from cut and leave.
Construction of temporary roads results in a reduction in soil productivity through loss of organic matter and surface soil. Exposure of soil to rainfall results in erosion. Road traffic results in soil compaction.

Cut and spraying infected trees is equivalent to cut and leave method of treatment concerning the soil resource. The addition of chemicals will have little to no adverse effect relating to soil erosion and compaction. Effects on the biological components of the soil will be analyzed when the chemical to be used is determined. Currently, there are no chemicals available for use in treating SPB. If a chemical becomes available, additional effects analysis will be done and tiered to this EA. Use of chemicals is usually restrictive and used for special situations such as recreation areas or T&E sites where rapid treatment is needed to control the spread of SPB.

Cut, pile, and burning infected trees is similar to cut and leave except for the burning portion. Burning piles has the potential for long duration hot burns as a result of heavy fuels involved. Piles are usually small and estimated at less than $1/10^{th}$ an acre in size. The soil beneath the piles

is susceptible to extreme heat which can sterilize the top few inches and result in soils becoming hydroscopic (altering soil moisture absorption). Timing of burns to reduce the effects on the soil resource may be difficult since immediate treatment of SPB sites is necessary for control. Post site prep treatment, such as drum chopping, would assist in breaking up the soil. Treatments of fertilizer and seeding grasses will assist in restoring the surface soil.

Site prep and replant SPB spots will be determined after SPB treatment. Type of site prep will be dependent on the size of the area to be planted. Site prep usually conducted on the Shoal Creek RD is burning, drum chop and burn, chemical and burn or chemical. The chemical site prep treatments would consist of 1) On stems less than 8 feet tall, a mixture of 4% Garlon 4 (Triclopyr), ½% Arsenal (Imazapyr), 1% Cide-Kick and 94.5% water will be sprayed on foliage until wet to the point just before runoff; 2) On stems greater than 8 feet tall, a mixture of 50% Garlon 3A (amine triclopyr), ½% Arsenal and 49.5% water will be applied by the frill method. Cuts must be horizontal, and edge-to-edge, regardless of stem diameter, penetrating into the sapwood to form a pocket that can hold the herbicide. The "Forestry Use Herbicide Labels and Safety Data Sheets" in the project file, lists vegetation that each herbicide targets.

Additional information on the effects of timber harvesting, associated types of site preparation and temporary roads can be found in the Final Environmental Impact Statement-Forest Health and RCW Initiative, National Forests in Alabama, Talladega Division, pages 43-44 and 45-50.

Alternative A (No Action)

There would be no additional potential for any direct, indirect, or cumulative effects upon the soil resource as a result of implementing this alternative. Effects from implementing 7,092 acres of thinning and restoration treatments covered in the Forest Health and RCW Initiative EIS will continue to occur. Effects from existing roads and trails, past Forest Service ground disturbing land management practices, and past land uses will also continue to occur.

Alternative B (Proposed Action)

The potential for a reduction in site productivity by implementing this alternative is slight if SPB treatment sites are few in number and under 5 acres in size. The potential for impacts to site productivity are expected to be moderate if SPB sites are numerous and large in size. Removal of infected wood is the primary control method. Cut and remove will have the greatest effect on the soil resource compared to the other treatment methods. Although the effects on the soil resource are greater using the cut and remove method of treatment, using this tool for SPB control can actually benefit the soil resource if sites are kept small (under 5 acres) versus using other methods that may not result in SPB control and allows for the spot to increase in size which directly results in more acres needing treatment and indirectly more acreage of soil disturbance.

Cut and remove will result in the highest potential for nutrient loss, soil erosion, and soil compaction. Nutrient loss will be slight as tops are left on site. Soil compaction will primarily occur on roads and loading decks. Erosion can be expected from exposed soils along skid trails, loading decks and roads for a short period of time. Cut, pile and burn has the potential for nutrient loss from burning. Soil erosion and compaction will have reduced effects compared to

cut and remove as a result of fewer passes, road use, and no loading decks. Cumulative effects would be minimal for either cut and remove or cut, pile and burn, as less than 0.5% of the total Shoal Creek Ranger District would be impacted on a yearly basis if 600 acres were treated annually. During non-epidemic years only 20 acres may be treated with either of these methods, resulting in less than 0.01% of the forested area on the district being impacted. Cut and leave and cut and spray will result in no nutrient loss and reduced soil erosion and compaction. Cut and leave, cut and spray and cut, pile and burn usually involves travel along roads with as few as one trip in and out of a site to as many as approximately 3 trips. Monitoring of southern pine beetle spots (NF in AL, 2000) showed cut and leave practices left little to no soil exposure within SPB sites and minimal ground disturbance along access roads leading into SPB sites. There would be no negative cumulative effects with either the cut and leave or cut and spray suppression tactics.

Construction of temporary roads and skid trails will result in soil compaction and some soil erosion. Standards and guidelines for soil and water should mitigate effects from erosion and compaction. Restoration of skid trails and roads at the end of treatment will mitigate soil erosion and compaction over a 3-5 year period.

3.2.4 Mitigation Measures

No special mitigations are recommended beyond the Standards and Guidelines specified for soil and water in the Revised Forest Land and Resource Management Plan found on pages 2-2, 2-11, 2-19 thru 2-21, 2-24, thru 2-25, 3-58, and 3-64 thru 3-69.

3.2.5 Monitoring

Pre and post monitoring will follow established protocol. Epidemic situations may require re-evaluation of standards or creation of new standards for soil and water. This will be accomplished in consultation with Forest Soil Scientist and/or Forest Hydrologist, Forest Fisheries Biologist and other entities such as the U.S. Fish and Wildlife Service.

3.3 Heritage Resources

All issues concerning heritage resources will be handled in accordance with the Memorandum of Agreement for Southern Pine Beetle Salvage between the Forest Service, the Alabama SHPO and Interested THPO's (located in project file). This memorandum allows for conducting SPB activities after the survey and then writing a report at the end of the epidemic year.

The Forest Service has developed a Cultural Resources Treatment Plan for the Southern Pine Beetle (SPB) Salvage Program on the National Forests in Alabama. Under this plan, if an inventory finds "no cultural resources" or "no effect" then the Forest Service does not need to allow SHPO or THPO's any further opportunity for comment prior to carrying out a treatment. Also if the Cultural Resources Treatment Plan is applied without any changes then there is no need for further consultation. However, if there is going to be a deviation from mitigation measures in the Cultural Resources Treatment Plan then the Forest Service will provide a

description of the treatment to the Alabama SHPO and THPO's for 10 days. If there is no response, then concurrence may be assumed.

Under the Memorandum of Agreement, referenced above, a management summary must be prepared after the archeological evaluation of each salvage unit. This summary will consist of the CRM/SPB request form and Alabama state site file forms, and will be made available upon request. In addition, at the end of each calendar year, after SPB salvage activities, the Forest Service will submit a report to SHPO describing all activities completed that year. This report must include identification, evaluation, and treatment for each area, as well as a description of archeological sites. The SHPO and THPO's will have 30 working days to review and comment on the annual report.

There would not be any direct, indirect, or cumulative effects on heritage resources, because if ground disturbing activity were to take place as part of the suppression tactic the area would be surveyed for cultural resources. If a new heritage site is discovered in an SPB area, the sale area would be designed to work around the heritage site.

3.4 Economic Analysis

The economic concerns of an SPB infestation center on the impacts of both market related and non-market related factors. Given the uncertainty of the actual growth that might occur, and the impacts on private lands throughout east Alabama, the analysis can only consider generalizations. The Decision to be Made and Purpose and Need do not depend on an economic "return" to justify taking action.

Alternative A

The impacts associated with Alternative A are a loss of opportunity in the value of stands impacted with SPB. Trees and stands that occur on suitable lands, which the FLRMP allows timber harvest to occur on will be killed and not provide the expected, normal economic return to the federal treasury, and local economy and tax base.

If, after the SPB has runs its course and the decision is made to initiate some level of reforestation, the cost of site preparation and reforestation will increase given the debris and hazards that will exist across the host type. This type of action is not planned at the present, however it could be a reasonably foreseeable action that might occur.

The most severe, direct effect of not suppressing a SPB outbreak would be loss of potential revenue to the U.S. Treasury and the local county governments and local economies. Since no timber would be harvested as a result of the SPB attack and infestation, no revenues would be generated. The loss of revenue to local economies and governments through the 35% Fund will be a real loss. Other impacts will be an increase in wildfire suppression costs, and impacts to local and regional timber industry loggers and forest products facilities as potentially merchantable trees will be lost to decay.

Visitors to the forest will tend to avoid areas that have been heavily impacted. This could mean fewer visitations for day-use and campground facilities, with a commensurate loss of income.

Cumulative Effects

The impacts to the value of the forest will last for many years. This will include forest product related losses, recreation impacts to campgrounds, day-use facilities and those that visit the forest to view and enjoy the "forested appearance". The local communities will experience a loss of revenue from the 35% Fund as stands that might be harvested are killed and no recovery of product or value is realized.

Irreversible and Irretrievable Commitments of Resources

There are no known irreversible commitments of resources associated with this alternative. The irretrievable commitments will be the loss of pine saw timber on national forest system lands; losses of private pine saw timber if the SPB spreads from the national forest to private lands; the loss of economic value from the impacted stands and recreational income sources; losses of habitat for various wildlife species and losses to future timber supply from mortality in pine stands of all ages.

Alternative B

The economic impacts for Alternative B will be similar to Alternative A, although the degree will be reduced. Direct control and suppression efforts will address spots with the greatest opportunity for spread. This will reduce the economic losses. There will be less impact to forest visitors. Losses to the economic value and utility of impacted stands of pine will be reduced.

Beetle-killed logs have a lower value; grades are reduced due to blue-stain fungi and decay; yields are not reduced very much, however more cull boards and increased slabbing results; board strength is reduced by 2/3 if 12 months are allowed to pass from mortality to recovery; and paper values are not impacted much until approximately 1.5 years after mortality (Technical Bulletin 1631, pages 139-140).

The available supply of pine forest products in the future is greater than alternative A as less mortality will occur. There will be less expense expected in the suppression of wildfires, and future reforestation costs.

The control of spots in close proximity to private lands will lower the risk of SPB spread from the national forest to private lands. This will reduce the chance of economic losses to private timberland and the pine tress that adjacent residents value for sight, shade and property value.

By minimizing impacts on local markets, timely suppression would also minimize the amount of reduction in the 35% returns to counties and impacts on the Federal treasury.

Economic Comparison of Suppression Techniques:

Cut and Remove - From an economic view cut and remove is the suppression method of choice because a SPB spot is marked (infested trees plus an uninfested buffer) and sold to a logging operator who pays the Forest Service to suppress the SPB spot. Prices for the timber involved are lower than prices for uninfested timber but reflect fair market values for salvage timber.

The lower timber prices are due to the decreased quality of the infested timber, the requirement that a purchaser respond quickly to cut and remove the timber, and the fact that the total volume of timber being sold in any given SPB spot is much less than the volume sold under regular timber sales thus decreasing the operating efficiency of the purchasers' operation. The amount of salvage timber available can also affect values.

Cut and Leave - Cut and leave is the next most economic suppression method. The Forest Service pays to have the SPB spot (infested trees plus an uninfested buffer) cut down and left. This method minimizes economic losses by stopping the spread of the spot. This method is used when: (1) ground conditions are too wet to access the spot with logging equipment; (2) the spot is remote or too steep and is not worth the cost of providing access; (3) under SPB epidemic conditions either the market is so flooded with salvage timber and/or there are not enough available operators to treat all the actively growing SPB spots that are occurring with a cut and remove suppression technique. With the first and third situations, the trees on the ground can later be sold and removed with a salvage sale when the ground conditions dry out or when market conditions improve/operators become available.

Cut and Hand Spray - Cut and hand spray is less economically desirable than cut and leave but still minimizes economic losses by stopping the spread of the spot. The Forest Service pays to have the SPB spot (infested trees only) cut down and the downed trees cut up into short lengths so that they may be rolled over. The cut up lengths are then sprayed thoroughly with an EPA approved insecticide. The spraying can be done by Forest Service employees or by contract but must conform to all requirements of insecticide application.

Pile and Burn - Pile and burn is economically comparable to cut and spray. This suppression method also minimizes economic losses by stopping the spread of the spot. The Forest Service would pay to have the SPB spot (infested trees only) cut down. The downed trees would then be piled using Forest Service equipment or contracted equipment. The burning operation would meet all requirements for prescribed burning. This method would rarely be used due to restrictions on pile burning and smoke management requirements.

Cumulative Effects

Timber values will not be impacted as much as under Alternative B. The Cut and Remove method will result in the capturing of some economic return to the treasury and generate 35% Funds to the affected counties. The impacts to the local forest products industry will be enhanced by the protection of many pine stands that might provide a source of material in the future.

3.5 Management Indicator Species (MIS)

3.5.1 Issues

No significant issues were identified.

3.5.2 Affected Environment

The general wildlife community that occurs on the Shoal Creek Ranger District is typical of the Alabama Ridge and Valley, with the exception of the red-cockaded woodpecker. Because it would not be feasible to monitor the effects of management on all wildlife species, a set of species were chosen to be "management indicators". MIS are selected to monitor the effectiveness of the Forest Plan direction in meeting the desired future conditions and plant/animal outcomes. Population changes in these selected species are believed to indicate the effects of management on a wide range of species. The Biological Evaluation and the Letter of Concurrence from the U.S. Fish & Wildlife Service are available for review in the project file. The MIS chosen for discussion with this project are the:

- **red-cockaded woodpecker** (indicator for mid- and late-successional pine and pine-oak forests),
- **northern bobwhite quail** (indicator for meeting hunting demand), and
- **prairie warbler** (indicator for creating and/or maintaining early successional forests).

Red-cockaded woodpecker Background and Existing Conditions

The red-cockaded woodpecker (*Picoides borealis*) is a federally listed endangered bird endemic to open, mature and old growth pine ecosystems in the southern United States. The RCW is a cooperative breeder, living in family groups typically consisting of a breeding pair and one or more helper males. The RCW excavates cavities in live pine trees that serve as nesting/roosting sites. The RCW utilizes the ability of live pines to produce large amounts of resin to create a barrier to snakes, one of the primary predators.

Red-cockaded woodpeckers require open pine woodlands with large old pines for nesting and roosting habitat. Large old pines are required as cavity trees because the cavities are excavated completely within inactive heartwood. Old pines are preferred as cavity trees because of the higher incidence of heartwood decay. Cavity trees must be in open stands with little or no hardwood midstory and little overstory hardwoods. Red-cockaded woodpeckers also require abundant foraging habitat, which consists of mature pines with an open canopy, low densities of small pines, little or no hardwood and pine midstory, few overstory hardwoods, and abundant native grasses and forbs.

Bird point surveys are conducted on an annual basis to assess the presence and absence, frequency of occurrence, and habitat conditions of the Shoal Creek Ranger District. In addition, monitoring is conducted in RCW clusters and suitable habitats to determine numbers and status of breeding pairs, annual nesting success, nesting productivity, and

survival. Further monitoring is conducted through annual banding of hatch-year birds and translocation monitoring.

Currently, there are less than 6,000 red-cockaded woodpecker family groups in the southern United States. In Alabama, fewer than 200 groups remain with most of these located on National Forest lands. On the Shoal Creek Ranger District, there are currently thirteen active clusters, up from two in 1988. Pre-1988, little information is available on the population status of RCWs on the District. However, the presence of natural cavity trees spread across the District indicates that it was once more common. The below figure displays the current RCW population on the Shoal Creek Ranger District.

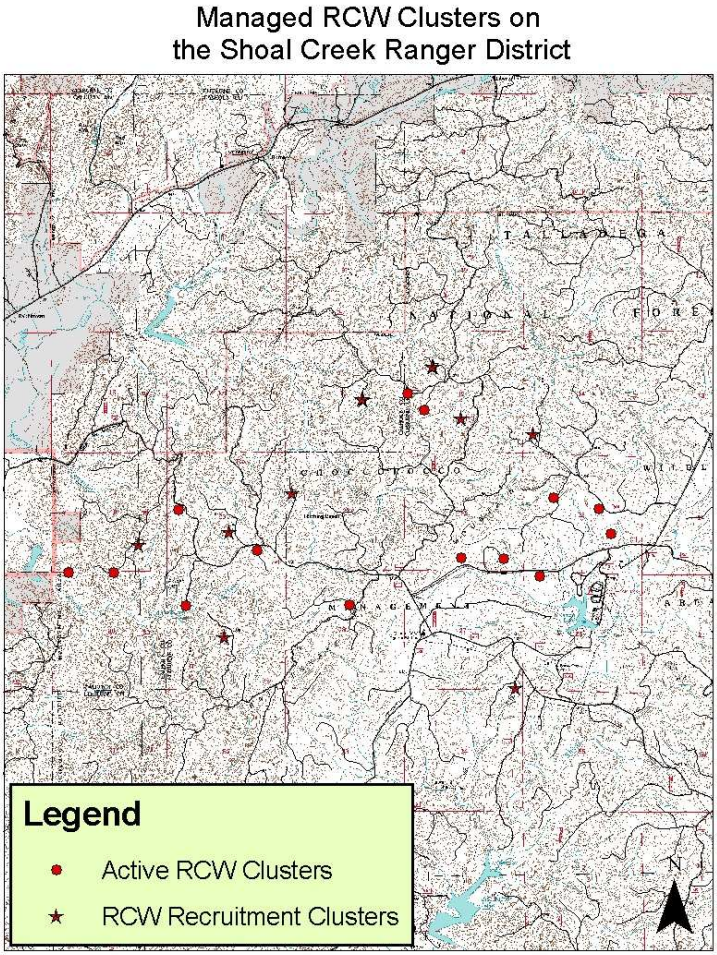

Figure 11 – Managed RCW Clusters on the Shoal Creek Ranger District.

3.5.3 Environmental Effects

Alternative 1-No Action

The direct effects to the RCW under this alternative would vary depending on the severity of a southern pine beetle (SPB) epidemic and the location of individual and/or multiple SPB spots in relation to RCW clusters and foraging areas. Under this alternative, SPB

would not be controlled/suppressed and would be allowed to run their course naturally. Small SPB infestations, which are far more frequent than major epidemics, can create a patchy, uneven-aged forest mosaic. Large epidemics can produce extensive tracts of even-aged stands.

Southern pine beetles can be preyed upon heavily by the RCW, particularly when adults are feeding young birds; however, this food source would be short-lived. Southern pine beetles can also directly affect the RCW by killing cavity trees. This resource is in short supply as today's forest contains younger pine trees that are unsuitable for cavity excavation. Indirect effects could occur as trees within foraging habitat are killed by SPB and could reduce habitat quality for the RCW over the long-term, particularly in areas where foraging habitat is made up of off-site species, such as loblolly pine, that are more susceptible to SPB attack. The degree of effects to the RCW would vary depending on the number of foraging trees killed. The death of individual or small clumps of non-cavity trees would have little impact on the RCW; however, large spots that kill many trees could have an impact on foraging habitat once the abundant food supply is gone.

Some actions, such as timber stand improvement, wildlife stand improvement, prescribed burning, and timber sales associated with the Forest Health EIS would continue under separate analysis. All of these actions have potential to impact the RCW. Prescribed burning, on a regular schedule, could maintain suitable habitat for the RCW by promoting an open forest structure that provides less potential for the spread of SPB. In contrast, prescribed burns can facilitate the spread of SPB if trees become stressed from a burn that gets too hot. Timber stand and wildlife stand improvement practices can promote the structure required by the RCW and can reduce the spread of SPB thru the removal of diseased, weakened, and off-site species. The Forest Health EIS covers a large area of the District and includes various thinning and restoration treatments to improve forest health and habitat for the RCW over the short and long-term future. Depending on the location and size of future SPB spots covered under this analysis, they could have varying degrees of effect on the RCW when combined with on-going actions on the District. Allowing SPB to naturally carry out their lifecycle could reduce the amount of suitable habitat required by the RCW. Due to the presence of considerable off-site pine species that is utilized by the RCW on the District, the no action alternative could result in negative cumulative impacts on the RCW.

Alternative 2-Proposed Action

Four methods of SPB control/suppression are being considered under the proposed action. These include: 1) cut and remove, 2) cut and leave, 3) cut and spray, and 4) cut, pile, and burn. All, or a combination of treatment methods, could be utilized to suppress SPB. The efficacy and impact of each treatment option on the RCW would vary depending on the location of SPB spots in relation to RCW clusters and foraging areas. There would be no direct effects to the RCW from any of the treatment methods listed above since salvage operations would be conducted in accordance with the Land and Resource Management Plan for the National Forests in Alabama and RCW Recovery Plan standards. Direct

effects, such as SPB killing a cavity tree, would be observed before suppression treatments were started and would depend on the activity of the SPB spot.

The indirect effects of these treatment methods again would depend on the location and size of SPB spots in relation to the location of RCW clusters and foraging areas. Cut and leave treatments may not eradicate the beetle and may allow for emerging beetles to create new spots that could further reduce foraging habitat. Cut and remove treatments have the greatest potential to stop the spread of an SPB spot. However, this treatment type, and the cut and leave method, need to remove the least amount of forest habitat (including buffer) necessary to control the spot, while preserving older pines when possible.

Cut and spray treatments may indirectly affect the RCW as birds could possibly consume insecticide. However, no insecticide is currently approved for use in treating SPB. If, and when, a pesticide becomes available, site specific analysis would need to be conducted. One benefit of insecticide use is that a buffer does not need treating and less trees would be lost for foraging by the RCW. Cut, pile, and burn treatments also do not require the cutting of buffer trees, which would reduce the amount of RCW foraging habitat lost.

The proposed alternative also includes site preparation and regeneration on sites impacted by SPB. Site preparation methods could include chemical treatment (e.g., injection and/or foliar spray) and/or prescribed burning. Both methods of site preparation would allow for the regeneration of longleaf pine that would eventually provide habitat for the RCW. The exact location of SPB spots, if any develop, are not known at this time. Once SPB spots are located, site specific analysis will be conducted. Regeneration of longleaf pine in SPB spots, particularly in locations where longleaf pine historically occurred, would be beneficial to the RCW over the long-term.

Some actions, such as timber stand improvement, wildlife stand improvement, prescribed burning, and timber sales associated with the Forest Health EIS would continue under separate analysis. All of these actions have potential to impact the RCW. Prescribed burning, on a regular schedule, could maintain suitable habitat for the RCW by promoting an open forest structure that provides less potential for the spread of SPB. In contrast, prescribed burns can facilitate the spread of SPB if trees become stressed from a burn that gets too hot. Timber stand and wildlife stand improvement practices can promote the structure required by the RCW and can reduce the spread of SPB thru the removal of diseased, weakened, and off-site species. The Forest Health EIS covers a large area of the District and includes various thinning and restoration treatments to improve forest health and habitat for the RCW over the short and long-term future. Depending on the location, size, and method of suppression of future SPB spots covered under this analysis, they could have varying degrees of effect on the RCW when combined with on-going actions on the District. Suppression and regeneration efforts would ultimately benefit the RCW and thus no negative cumulative effects are expected.

Northern bobwhite quail Background and Existing Conditions

The northern bobwhite quail (*Colinus virginianus*) is a game bird species that is closely associated with early successional plant communities (Spears et al. 1993). Throughout its range, the bobwhite provides important ecological, social, aesthetic, recreational, and economic values (Burger 2001). Overall, the population of bobwhite quail within its range has declined significantly in the past decades. Habitat degradation has been attributed for this decline. Quail primarily feed in fields and open forests. Their diet is mainly vegetative and composed primarily of small fruits, seeds, and green forage. Researchers have found that quail require a variety of cover types for different functions and activities throughout the year (Yarrow and Yarrow, 1999).

Year-round access to edge plant species in close proximity to cover are key factors for the success of this species. Northern bobwhite quail would not survive in mature closed canopy forests with no ground cover. In forested landscapes, the mid and overstory influence habitat suitability because these components affect groundcover composition through interception of light, water, and nutrients (Burger, 2001). Quality habitat for bobwhite quail in forests within its range can be maintained by controlling midstory and groundcover with prescribed fire on a strategic rotation (1 to 3 years). Like many wildlife species, bobwhite quail respond favorably in habitats with more diversity.

The bobwhite quail is monitored through bird point surveys that are conducted yearly, during May, to assess the presence or absence, frequency of occurrence, and habitat conditions across the Shoal Creek Ranger District. This survey detects breeding territories of birds. Additionally, bobwhite quail fall covey counts have been conducted the past two years and would provide a baseline across several habitat types.

Breeding bird survey data documents a 4% per year decline in bobwhite quail abundance in Alabama since the 1960's. In the mid 1980's to 1990's, decline accelerated to 9% per year. The quail population in Alabama is less than 20% of what it was when surveys began in 1966. On the Shoal Creek Ranger District, quail have experienced similar declines. On approximately 60 permanent bird points surveyed yearly on the District, the detection of quail across all habitat types has decreased from 14% to 2% of points surveyed. However, fall covey call counts indicated approximately 1 covey/38 acres in good quality quail habitat in 2004 and 1 covey/34 acres in 2006.

Environmental Effects

Alternative 1-No Action

The direct effects to northern bobwhite quail under this alternative would vary depending on the severity of a southern pine beetle (SPB) epidemic and the location of individual and/or multiple SPB spots. Under this alternative, SPB would not be controlled/suppressed and would be allowed to run their course naturally. Small SPB infestations, which are far more frequent than major epidemics, can create a patchy, uneven-aged forest mosaic. Large epidemics can produce extensive tracts of even-aged stands.

Indirect effects to northern bobwhite quail would vary depending on the severity of SPB spots. Quail respond favorably to various types of disturbance. These disturbances would open an area and create habitat diversity. The benefit from these events would vary in degree of significance based on size and distribution. Opening of the canopy would allow more sunlight to reach the forest floor and would promote the development of understory vegetation beneficial to quail. After forest opening, suitable habitat would be present for quail several years after SPB attack and would also be dependent upon site specific conditions and other factors such as the presence of fire. At some point, natural regeneration would make the site less suitable for quail.

Some actions, such as timber stand improvement, wildlife stand improvement, prescribed burning, and timber sales associated with the Forest Health EIS would continue under separate analysis. All of these actions have potential to impact the northern bobwhite quail. Prescribed burning, on a regular schedule, could maintain suitable habitat for quail by promoting an open forest structure. Timber stand and wildlife stand improvement practices can promote the structure required by quail. The Forest Health EIS covers a large area of the District and includes various thinning and restoration treatments to improve forest health and habitat for the RCW over the short and long-term future. Improvement of habitat for the RCW would also benefit habitat of quail. Depending on the location and size of future SPB spots covered under this analysis, they could have varying degrees of effect on quail when combined with on-going actions on the District. Allowing SPB to naturally carry out their lifecycle could improve habitat for quail by creating more forest openings. The no action alternative would have no negative cumulative effect on this species.

Alternative 2-Proposed Action

Generally, there would be no direct effects to the bobwhite quail since this species would be able to move away from treatment activities. However, it is possible that treatment activities administered during the nesting period could destroy nests and result in temporary reductions in productivity. These effects are considered minor since only a portion of the area would be treated at any one time and risk to annual productivity is limited to the spring nesting and brood-rearing period.

Forest openings created by SPB and subsequent suppression measures would result in habitat that is preferred by bobwhite quail over the short-term. The removal of trees would open the stand and allow more sunlight to reach the forest floor and increase diversity of groundcover. If thinned stands are kept open by periodic burning, they would provide habitat preferred by this species for a longer time. Periodic prescribed burning in these more open stands would allow and encourage the establishment of native grasses and forbs and provide more cover and food. The cut and spray method of SPB suppression has the greatest potential to impact quail. Several studies have shown that there is reduced chick survival in quail that have been exposed to insecticides. However, the use of insecticides as a treatment method is anticipated to be extremely limited in scope, primarily due to cost, and would impact a small percentage of quail on the District. When, and if, an insecticide

is approved for use on Forest Service lands, analysis would be conducted to determine the effects of that specific chemical.

Overall, habitat for this species may become more desirable and increase under this alternative, based upon the degree of SPB activity. There are no negative cumulative effects associated with the proposed action on the bobwhite quail.

Prairie warbler Background and Existing Conditions

The primary habitat of the prairie warbler (*Dendroica discolor*) is early-successional openings or corridors in forests, or more optimally stable shrublands. Suitable habitats for this species include open pine woodlands with sparse woody vegetation and shrubs. In the absence of naturally occurring fires, where pine or deciduous forests are the climax vegetation, active management (i.e., prescribed burning, thinning, and clearcutting) is necessary to create the early successional, shrubby vegetation required by this bird. As single areas cannot provide continually favorable habitat, a landscape should be managed to provide a mosaic of sites in different successional stages.

The prairie warbler is monitored through bird point surveys that are conducted yearly to assess the presence or absence, frequency of occurrence, and habitat conditions across the Shoal Creek Ranger District.

According to breeding bird survey data, prairie warbler declined on average 2.15% per year from 1966-1992. On approximately 60 permanent bird points surveyed yearly on the District, the detection of prairie warbler across all habitat types has decreased from 64% to 50% of points surveyed.

Environmental Effects

Alternative 1-No Action

There would be no direct effects to the prairie warbler under this alternative since no management activities would occur. Most of the indirect effects that would occur relate to natural disturbances that have potential to occur within the project area. These could include wildfires, tornadoes and other devastating wind events, and southern pine beetle epidemics. These natural disturbances would occasionally open up an area and provide habitat diversity across the landscape. The impacts of these types of disturbances would vary in degree of significance because of the limited size and distribution of areas opened by natural disturbances.

Some actions, such as timber stand improvement, wildlife stand improvement, prescribed burning, and timber sales associated with the Forest Health EIS would continue under separate analysis. All of these actions have potential to impact the prairie warbler. Prescribed burning, on a regular schedule, could maintain suitable habitat for prairie warbler by promoting an open forest structure with a diverse understory component. Timber stand and wildlife stand improvement practices can promote the structure required

by prairie warbler. The Forest Health EIS covers a large area of the District and includes various thinning and restoration treatments to improve forest health and habitat for the RCW over the short and long-term future. Improvement of habitat for the RCW would also benefit habitat of prairie warbler. Depending on the location and size of future SPB spots covered under this analysis, they could have varying degrees of effect on prairie warbler when combined with on-going actions on the District. Allowing SPB to naturally carry out their lifecycle could improve habitat for prairie warbler by creating more forest openings and thus no negative cumulative effects would occur.

Alternative 2-Proposed Action

Generally, there would be no direct effects to this species since it would be able to leave the area once disturbances began. However, it is possible that if activities of the proposed action are carried out during the nesting season, individual nests could be impacted. Prairie warblers typically nest in low shrubs or small trees and these nests could be crushed by equipment conducting a salvage sale. These effects are considered minor since only a small part of suitable habitat would be treated at any one time. In addition, treatments would have to occur at the exact time that this species is most vulnerable and also occur over successive years and on a larger scale to have substantial impacts. Based on past projects, this extent of impact is highly unlikely.

Forest openings created by SPB and subsequent suppression measures would result in habitat that is preferred by prairie warbler over the short-term. The removal of trees would open the stand and allow more sunlight to reach the forest floor and increase diversity of groundcover. Habitat conditions for prairie warbler would be optimal several years after the SPB spot as a mixture of shrubby and grassy vegetation took over the spot. Periodic prescribed burning in these more open stands would allow and encourage the establishment of native grasses and forbs and provide more cover and food. The cut and spray method of SPB suppression has the greatest potential to impact prairie warbler. However, the use of insecticides as a treatment method is anticipated to be extremely limited in scope, primarily due to cost, and would impact a small percentage of prairie warbler on the District. When, and if, an insecticide is approved for use on Forest Service lands, analysis would be conducted to determine the effects of that specific chemical. There would be no negative cumulative impacts from this proposed action on the prairie warbler.

MIS not chosen for the Suppression of Southern Pine Beetle Project:

Wood Thrush-indicate management effects on wildlife species dependent upon mature forest interior conditions.

Pileated woodpecker-indicate management effects on snag dependent wildlife species.

Acadian flycatcher-indicate management effects within mature riparian forest community.

Swainson's warbler-indicate management effects within early successional riparian forest community.

White-tailed deer-indicate management effects on meeting hunting demand for this species.

Eastern wild turkey-indicate management effects on meeting hunting demand for this species.

Hooded warber-indicate management effects on mesic deciduous forest and mesic oak and oak-pine communities.

Scarlet tanager-indicate management effects on xeric oak and oak-pine forest communities.

3.6 Water Analysis

3.6.1 Issues

No significant issues were identified.

3.6.2 Affected Environment

The Shoal Creek Ranger District is within 2 basins, the Coosa and Tallapoosa. Forest Service ownership within these basins is within 11 fifth level HUC's or watersheds. The fifth level HUC's within the Coosa Basin with Forest Service ownership are Tallassehatchee Creek, Middle Choccolocco Creek, Upper Choccolocco Creek, Hurricane Creek ,and Upper Terrapin Creek. The fifth level HUC's within the Tallapoosa Basin with Forest Service ownership are Ketchepedrakee Creek, Muscadine Creek, Cane Creek, Cahulga Creek, Chulafinnee Creek, and Mad Indian Creek. According to the Alabama Department of Environmental Management's Water Use Designations there are twelve water bodies that have some type of designated use as illustrated in Table 2 below.

Table 2: Water Use Designations

MgtAre	Basin	5th HUC	Name	Stream	Classification
TL	Tallapoosa River	0315010812	Cahulga Creek	Cahulga Creek	PWS/F&W
TL	Coosa River	0315010809	Cane Creek	Cane Creek	F&W
TL	Coosa River	0315010815	Ketchpedrakee Creek	Cave Creek	F&W
TL	Coosa River	0315010625	Middle Choccolocco Creek	Hillabee Lake	PWS/S/F&W
TL	Coosa River	0315010625	Middle Choccolocco Creek	Salt Creek	S/F&W
TL	Coosa River	0315010701	Tallasseehatchee_TL	Tallasseehatchee Creek	PWS/F&W
TL	Coosa River	0315010624	Upper Choccolocco Creek	Choccolocco Creek	F&W
TL	Coosa River	0315010624	Upper Choccolocco Creek	Coleman Lake	S/F&W
TL	Coosa River	0315010624	Upper Choccolocco Creek	Shoal Creek	S/F&W

MgtAre	Basin	5th HUC	Name	Stream	Classification
TL	Coosa River	0315010624	Upper Choccolocco Creek	Sweetwater Lake	PWS/S/F&W
TL	Coosa River	0315010624	Upper Choccolocco Creek	High Rock Lake	S/F&W
TL	Coosa River	0315010522	Upper Terrapin Creek	Terrapin Creek	PWS/F&W

OAW - Outstanding Alabama Water

PWS –Public Water Supply

S – Swimming and Other Whole Body Water – Contact Sports

F&W – Fish and Wildlife

* - Special Designation of Outstanding National Resource Water

Land cover within this part of the state tends to be well forested on the uplands with agricultural land use dominating the drainages except within Forest Service ownership where the drainages are also forested.

The groundwater on the Shoal Creek is contained in the Piedmont and Blue Ridge aquifer system, as well as the Valley and Ridge aquifer system. The majority of the ground water in the Piedmont and Blue Ridge aquifer system can be found in fractures within the metamorphic rock. The majority of the groundwater in the Valley and Ridge aquifer system can be found in sandstone, limestone and dolomite formations. Both systems have some lateral communication with the surface. The productivity of the Piedmont and Blue Ridge aquifer system varies with fracture size, but is generally inadequate for municipal supply. The productivity of the Valley and Ridge aquifer system is generally good. (Miller, 1990.)

3.6.3 Environmental Effects

The Southern Pine Beetle has the potential to greatly affect the water yield, timing and flow of waters from forested areas and thereby altering stream geomorphology due to a loss of the storage capacity of living trees and the resultant change in ground cover. This type of geomorphological change would be the result of epidemic level outbreaks of SPB where a significant amount of mortality occurs within a given watershed.

Proposed actions to limit SPB caused mortality to less than epidemic levels include cut and leave, cut and removal, cut and spray, and cut pile and burn. Cut and removal is known to potentially affect water quality, water quantity, channel morphology, and downstream designated uses. Cut and removal has the potential to cause the following direct effects: erosion, changes in ground cover condition, and changes in stand composition of streamside forest communities (Golden et al., 1984: Ursic, 1991; Belt et al., 1992; Brown and Binkley, 1994). Indirect effects could include sedimentation, changes in stream nutrient levels (particularly nitrates) increases in water yield, and changes in stream flow behavior (Golden et al., 1984; Brown and Binkley, 1994). Cut and leave will have a much lower potential for direct and indirect effects. Cut and spray would have similar potential for effects to cut and leave with the added risks of chemical treatments. No specific pesticide has been proposed in this action therefore any chemical used

would require analysis before application. Cut, pile and burn treatment has the highest potential for effects because it has the added risk of hydrophobicity due to the intense heat that would be generated by piling and burning. Temporary roads associated with these actions are also known to potentially affect water quality, water quantity, channel morphology, and downstream designated uses.

Areas effected by SPB infestation that require site prep would require further analysis if it involves the use of mechanical means (drum chopping or shear and rake), site prep burning and/or herbicide applications. Hand or mechanical planting of young trees has no direct effect upon the water resource. Indirect effects (after a period of years) are potential decreases in water yield and changes in the composition of streamside forest communities.

Alternative A (No Action)

Alternative A may result in SPB outbreaks reaching epidemic levels where a significant amount of mortality would occur within a given watershed increasing water yield, timing and flow thereby altering downstream geomorphology.

Alternative B (Proposed Action)

Alternative B proposes to limit SPB caused mortality to less than epidemic levels by cut and leave, cut and removal, cut and spray, and cut pile and burn. Restoration of affected areas proposes site prep and planting. The direct and indirect effects of these actions are discussed in the above environmental effects section.

3.6.4 Mitigation Measures

No special mitigations are recommended beyond the Standards and Guidelines specified for soil and water in the Revised Forest Land and Resource Management Plan found on pages 2-2, 2-11, 2-19 thru 2-21, 2-24, thru 2-25, 3-58, and 3-64 thru 3-69.

Pre and post monitoring will follow established protocol. Epidemic situations may require re-evaluation of standards or creation of new standards for soil and water. This will be accomplished in consultation with Forest Soil Scientist and/or Forest Hydrologist, Forest Fisheries Biologist and other entities such as the U.S. Fish and Wildlife Service.

3.6.5 Cumulative Effects

Between January 2000 and July 2006 no green timber was harvested on the Shoal Creek Ranger District. Beginning in August 2006 with the Forest Health and RCW Initiative EIS, 160 acres have been thinned to date and 30 acres of longleaf restoration cuts have been completed. Between the present and September 2009, 451 acres of thinning and 385 acres of longleaf restoration cuts have been sold and are expected to be cut. On the Shoal Creek Ranger District, it is foreseeable that an additional 747 acres of longleaf restoration and 325 acres of thinning will be sold in FY2008 to be cut by 2011. Over a period of five years, less than 2% of the entire

Shoal Creek Ranger District will be impacted by planned timber harvests. Impacts on water resources and aquatic species from timber harvests are normally recovered before a new cycle of harvesting begins, and as a result, cumulative impacts from successive harvesting operations would be expected to be minimal for the majority of harvested areas. In those areas that produce a significant amount of grasses and legumes following harvest operations, increased water infiltration and reduced runoff and sedimentation would be anticipated. Resultant soil stabilization can provide long-term benefits water resources. Areas that are repeatedly used for logging decks and skid trails in stands that have frequent entries have the potential to suffer more continuous periods of increased water runoff, and subsequent erosion and sedimentation impacts. Although rehabilitation of these sites decreases the duration of these adverse water quality impacts and lessens the potential for cumulative degradation of water resources, the reopening and use of these areas during successive harvest operations generally results in increased sediment and decreased water quality and aquatic species habitat in the vicinity of these sites.

Agricultural and timber harvest activities on private lands are expected to contribute to both short-term and long-term adverse impacts on water resources and aquatic species and would interact cumulatively with the proposed activities under Alternative 2. However, overall cumulative impacts from these activities on private lands are expected to be minimal, since the majority of the project area is forested and would remain in forested land use, which contributes comparatively little sediment relative to private uses.

CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

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APPENDIX A

GLOSSARY

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GLOSSARY

Algal Bloom: A rapid growth of phytoplankton in response to changing environmental conditions, often associated with warming temperatures or presence of added nutrients. Algal blooms can result in oxygen depletion and biological impacts.

Archaeological Resources: Any material of human life or activities that is at least 100 years old, and that is of archaeological interest.

Attainment Area: An area considered to have air quality as good as or better than the National Ambient Air Quality Standards as defined in the Clean Air Act. An area may be an attainment area for one pollutant and a non-attainment area for others.

Basal Area: The cross-sectional area (square feet at 4.5 feet above ground level) of trees occupying an acre of land.

Best Management Practice (BMP): A practice or combination of practices chosen as the most effective, economical, and practical means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with State and local water quality goals. Selection of appropriate BMPs depends largely upon the conditions of the site, such as land use, topography, slope, water table elevation, and geology.

Biochemical Oxygen Demand: Amount of molecular oxygen that can be taken up by nonliving organic matter as it decomposes by aerobic biochemical action.

Canopy: The cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth.

Compaction: The application of pressure to soil or clay, reducing its permeability to liquids.

Cultural Resources: Any building, site, district, structure, object, data, or other material significant in history, architecture, archeology, or culture. Cultural resources include: historic properties as defined in the National Historic Preservation Act (NHPA), cultural items as defined in the Native American Graves Protection and Repatriation Act (NAGPRA), archeological resources as defined in the Archeological Resources Protection Act (ARPA), sacred sites as defined in Executive Order 13007, *Protection and Accommodation of Access To "Indian Sacred Sites,"* to which access is provided under the American Indian Religious Freedom Act (AIRFA), and collections.

Cumulative Impacts: Impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (Federal or non-Federal) or person undertakes such other actions; effects resulting from individually minor, but collectively significant, actions taking place over a period of time.

Dispersed Recreation: Recreation use in areas not developed for intensive recreation use. Dispersed areas include general undeveloped areas, roads, trails, and water areas not treated as developed sites.

Dissolved Oxygen: The concentration of oxygen dissolved in water, expressed in milligrams per liter (mg/L) or a percent saturation, where saturation is the maximum amount of oxygen that can theoretically be dissolved in water at a given altitude and temperature.

Diversity: The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan.

Dominant Trees: Trees that extend above surrounding individuals and capture sunlight from above and around the crown.

Edge: The boundary between two ecological communities (e.g., field and woodland). Edges provide wildlife habitat.

Endangered Species: A species that is threatened with extinction throughout all or a significant portion of its range.

Forb: Any herbaceous plant other than grass or grass-like plants.

Fuels: Wildland vegetation materials which can burn. While usually referring to above ground living and dead wildland surface vegetation, roots and organic soils, such as peat, are often included.

Fuel Management: The practice of planning and executing treatment or control of any vegetative material, which adversely affects meeting fire management direction based upon resource management goals and objectives.

Fugitive Dust: Particulate matter composed of soil, uncontaminated from pollutants, resulting from industrial activity. Fugitive dust may include emissions from haul roads, wind erosion of exposed soil surfaces, and other activities in which soil is either moved or redistributed.

Habitat: The natural environment of a plant or animal. An animal's habitat includes the total environmental conditions for food, cover, and water within its home range.

Hardwood: A broad-leaved, deciduous tree as distinguished from a conifer. Trees belonging to the botanical group of angiospermae.

Herbicide: A chemical used to control, suppress, or kill plants, or to severely interrupt their normal growth processes.

Historic Property: As defined by the NHPA, a historic property or historic resource is any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP), including any artifacts, records, and remains that are related to and located in such properties. The term also includes properties of traditional religious and cultural importance (traditional cultural properties), which are eligible for inclusion in the NRHP as a result of their association with the cultural practices or beliefs of an Indian tribe or Native Hawaiian organization.

Interdisciplinary Team: A group of individuals with skills from different resources assembled to identify and resolve issues and problems.

Intermittent Stream: A stream which flows only at certain times of the year when it receives water from springs or from some surface sources.

Management Indicator Species (MIS): A species whose presence in a certain location or situation at a given population indicates a particular environmental condition. Their population changes are believed to indicate effects of management activities on a number of other species or water quality.

Mitigation: A method or action to reduce or eliminate adverse program impacts.

Natural Regeneration: The renewal of a tree crop by natural means, or without efforts to seed or plant trees. The new trees grow from self-sown seeds or by vegetative means, such as root suckers.

Nutrient Cycle: The cyclic conversions of nutrients from one form to another within the biological communities.

Overstory: The level of forest canopy that includes the crowns of dominant, co-dominant, and intermediate trees.

Particulate Matter/Particulates: Small particles in the air generally considered to be pollutants. These may include dust, dirt, soot, smoke, and liquid droplets.

Payments In Lieu Of Taxes (PILT): Payments to local governments containing federally owned lands. Recognizing the inability of local governments to collect property taxes on federally owned land, Congress enacted the Payment in Lieu of Taxes Act (Public Law 94-565) in 1976. The Act provides for payments to local governments containing certain federally owned lands.

Perennial Stream: A stream that flows throughout the year.

Prescribed Fire/Burn: A wildland fire burning under specified conditions to accomplish specific planned objectives. The fire may result from either planned or unplanned ignitions.

Riparian Areas: Areas with 3-dimensional ecotones of interaction that include terrestrial and aquatic ecosystems. They extend down into the groundwater, up above the canopy, outward across the floodplain, up the near-slopes that drain to the water, laterally into the terrestrial ecosystem, and along the watercourse at a variable width.

Runoff: Non-infiltrating water entering a stream or other conveyance channel shortly after a rainfall.

Sediment: Any finely divided organic and/or mineral matter derived from rock or biological sources that have been transported and deposited by water or air.

Sedimentation: The process of depositing sediment from suspension in water.

Sediment Yield: Amount of solid waste delivered to a watercourse.

Sensitive Receptor: An area defined as sensitive to noise, such as a hospital, residential area, school, outdoor theater, and protected wildlife species.

Shrub: A plant with persistent woody stems and relatively low growth form; usually produces several basal shoots as opposed to a single bole; differs from a tree by its low stature and nonarborescent form.

Skid Trail: Travelway used to drag or transport trees from the stump to a landing.

Snag: A standing dead tree, used by birds for nesting, roosting, perching, courting, and/or foraging for food.

Soil Erosion: The removal and loss of soil by the action of water, ice, gravity, or wind.

Stand: Trees that grow in the same location, and which are fairly uniform in type, age, and risk classes, vigor, stand-size class, and stocking class. The similarity of these qualities distinguishes the stand from adjacent stands that contain trees with different features.

State Historic Preservation Officer (SHPO): The official within each state, authorized by the state at the request of the Secretary of the Interior, to act as a liaison for purposes of implementing the NHPA.

Streamside Management Zone (SMZ): An area adjacent to the bank of a perennial or intermittent stream or other body of open water (lakes, ponds, etc.) where extra precaution is necessary to carry out forest practices in order to protect bank edges and water quality.

Succession: The orderly process of biotic community development that involves changes in species, structure, and community processes with time; it is reasonably directional, and therefore, predictable.

Successional Stage: A stage or recognizable condition of a plant community that occurs during its development from bare ground to climax: grass, forb, shrub seedling, pole-sapling, immature, mature, old growth.

Thinning: Cutting made in an immature stand, primarily to accelerate the diameter increment (annual growth) of the residual tress, but also by suitable selection, to improve the average form of the trees that remain.

Threatened Species: A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Total Maximum Daily Loads (TMDLs): A study that identifies all significant sources of pollution, the pollutant contribution from each source, and the pollutant deductions needed from each source to attain and maintain water quality standards. TMDLs are pollutant-specific.

Tributary: A stream or other body of water that contributes to another stream.

Turbidity: Measure of the extent to which light passing through water is reduced due to suspended matter. The turbidity is caused by the content and shape of the suspended materials, which include clay, silt, finely-divided organic and inorganic matter, soluble colored organic compounds, plankton, and other microscopic organisms and similar substances.

Understory: The vegetative lower layer of a forest, which consists of non-woody plants, shrubs, and tree saplings.

Water Yield: The runoff from a drainage basin including groundwater outflow that appears in the stream, plus ground water outflow that bypasses the gaging station and leaves the basin underground. Water yield is the precipitation minus evapotranspiration.

Wetlands: Areas that are inundated or saturated with surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil, including swamps, marshes, bogs, and other similar areas.

Wildlife Opening: An administratively designated development that is constructed and maintained to improve wildlife habitat. Areas designated as managed wildlife openings may include cereal grain

openings, warm-season grass openings, legume openings, old-field successional lands, or native herbaceous open-lands.

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APPENDIX B

ENVIRONMENTAL LAWS AND REGULATIONS

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RELEVANT LAWS AND REGULATIONS	Summary	AFFECTED RESOURCE(S)
The National Environmental Policy Act (NEPA) (42 USC 4321-4370)	Requires Federal agencies to evaluate the environmental impacts of their actions and to integrate such evaluations into their decision-making processes.	All
Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508)	These regulations implement NEPA and establish two different levels of environmental analysis: the environmental assessment (EA) and the environmental impact statement (EIS). An EA determines whether significant impacts may result from a proposed action. If significant impacts are identified, an EIS is required to provide the public with a detailed analysis of alternative actions, their impacts, and mitigation measures, if necessary.	All
The Clean Water Act (CWA) (33 USC 1251 et seq.)	Section 401, the state water quality certification process, gives states the authority to grant, deny, or condition the issuance of Federal permits that may result in a discharge to the waters of the United States based on compliance with water quality standards. Section 404 regulates the discharge of pollutants, including dredged or fill material, into navigable waters of the U.S. through a permit system jointly administered by the U.S. Environmental Protection Agency (USEPA) and the U.S. Army Corps of Engineers (USACE). Nonpoint sources requirements control pesticide runoff, forestry operations, and parking lots/motor pools. Point sources require individual or group permits and must be monitored at the point at which they enter public waters, storm sewers, or natural waterways. Section 303(d) requires states to identify waters not in compliance with water quality standards, develop a list of impaired waters, and develop Total Maximum Daily Loads (TMDLs) for those impaired waters. Section 305(b) requires states to report on the quality of navigable waters in their state. Section 311 (j) requires facilities to prepare a Spill Prevention Control and Countermeasure Plan, containing minimum prevention facilities, restraints against drainage, an oil spill contingency plan, etc.	Water Resources, Biological Resources
The Clean Air Act (CAA) (42 USC 7401 et seq.)	Among its varied provisions, the CAA establishes standards for air quality in regard to the pollutants generated by internal combustion engines. These standards, known as the National Ambient Air Quality Standards (NAAQS), define the concentrations of these pollutants that are allowable in air to which the general public is exposed ("ambient air").	Air Quality

The Endangered Species Act (ESA) (16 USC 1531-1544)	Prohibits the harming of any species listed by the U. S. Fish and Wildlife Service (USFWS) as being either Threatened or Endangered. Harming such species includes not only directly injuring or killing them, but also disrupting the habitat on which they depend.	Biological Resources
Migratory Bird Treaty Act (16 USC 703 et seq.)	Restricts the taking, possession, transportation, sale, purchase, importation, and exportation of migratory birds through permits issued by the USFWS.	Biological Resources
National Emissions Standards for Hazardous Air Pollutants (NESHAP)	Places standards on all hazardous air pollutants and governs such areas as organic liquids, asbestos, polyurethane foam, and wastewater. NESHAP is implemented under USEPA jurisdiction.	Air Quality, Waste Management
The Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978 (42 USC 4901 et seq.)	Requires compliance with State and local noise laws and ordinances.	Noise, Human Health and Safety
Archaeological Resources Protection Act (ARPA) (16 USC 470a et seq.)	Ensures the protection and preservation of archeological resources on Federal lands.	Cultural Resources
National Historic Preservation Act (NHPA) (16 USC 470 et seq.)	Provides the framework for Federal review and protection of cultural resources, and ensures that they are considered during Federal project planning and execution. The implementing regulations for the Section 106 process (36 CFR Part 800) have been developed by the Advisory Council on Historic Preservation (ACHP). The Secretary of the Interior maintains a National Register of Historic Places (NRHP) and sets forth significance criteria for inclusion in the register. Cultural resources included in the NRHP, or determined eligible for inclusion, are considered "historic properties" for the purposes of consideration by Federal undertakings.	Cultural Resources
Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001 et seq.)	Protects Native American human remains, burials, and associated burial goods.	Cultural Resources
Safe Drinking Water Act (SDWA) (42 USC 300 et seq.)	Provides for the safety of drinking water throughout the U.S. by establishing and enforcing national drinking water quality standards. Protects public health by establishing safe limits (maximum containment limits) for contaminants based upon the quality of water at the tap, and prevents contamination of surface and ground sources of drinking water. The USEPA is responsible for establishing the national standards; the States are responsible for enforcement of the standards	Water Resources, Human Health and Safety
Resource Conservation and Recovery Act	Regulates all aspects of the handling of hazardous waste through RCRA permits issued by the USEPA.	Hazardous Materials

(RCRA) (42 USC 6901 et seq.)		
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC 9601 et seq.)	Provided broad Federal authority to respond directly to releases of hazardous materials that may endanger public health or the environment. Established prohibitions and requirements pertaining to closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when a responsible party cannot be identified.	Hazardous Materials
Federal Land Policy and Management Act (43 USC et seq.)	Declares that all public lands will be retained in federal ownership unless it is determined that a use other than public will better serve the interests of the nation. Requires that all public land be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, and environmental aspects of the land. Requires that all public lands and their resources be inventoried periodically and systematically.	All
National Forest Management Act of 1976 (NFMA) (16 USC 1600-1614)	Requires the Secretary of Agriculture to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System. It is the primary statute governing the administration of National Forests.	All
Cooperative Work—Knutson-Vandenberg Fund (16 U.S.C. 576-576b)	A trust fund that uses deposits made by timber purchasers to reforest timber sale areas. In addition to planting, these deposits may also be used for controlling or eliminating unwanted vegetation on lands cut over by the timber purchasers and for protecting and improving the future productivity of the renewable resources on forest land in the sale areas, including sale area improvement operations, maintenance, construction, reforesta-tion, and wildlife habitat management.	All
Executive Order (E.O.) 11514: Protection and Enhancement of Environmental Quality	Provides leadership for protecting and enhancing the quality of the Nation's environment to sustain and enrich human life.	All
E.O. 11593: Protection & Enhancement of the Cultural Environment	Provides leadership for protecting, enhancing, and maintaining the quality of the Nation's historic and cultural environment.	Cultural Resources
E.O. 12372: Intergovernmental Review of Federal Programs	Directs Federal agencies to consult with and solicit comments from state and local government officials whose jurisdictions would be affected by Federal actions.	All
E.O. 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	Requires Federal actions to achieve Environmental Justice by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.	All

E.O. 13007: Protection and Accommodation of Access To "Indian Sacred Sites"	Directs Federal agencies to consider Indian sacred sites in planning agency activities.	Cultural Resources
E.O. 13045: Protection of Children from Environmental Health Risks and Safety Risks	Requires Federal actions and policies to identify and address disproportionately adverse risks to the health and safety of children.	All
E.O. 11990: Protection of Wetlands	An overall wetlands policy for all agencies managing Federal lands, sponsoring Federal projects, or providing Federal funds to State or local projects. It requires Federal agencies to follow avoidance/mitigation/ preservation procedures with public input before proposing new construction projects.	Water Resources, Biological Resources
E.O. 11988: Floodplain Management	Requires all Federal agencies to take action to reduce the risk of flood loss, to restore and preserve the natural and beneficial values served by floodplains, and to minimize the impact of floods on human safety, health, and welfare. Because many wetlands are located in floodplains, E.O. 11988 has the secondary effect of protecting wetlands.	Water Resources, Biological Resources

E.O. 12856: Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements	Requires that the head of each federal agency be responsible for ensuring that all necessary actions are taken for the prevention of pollution with respect to the agency's activities and facilities, and for ensuring that the agency complies with pollution prevention, emergency planning, and community right-to-know provisions.	Hazardous Materials
E.O. 13112: Invasive Species	Requires Federal agencies to prevent new invasive introductions; detect, monitor, and rapidly respond to/control current infestations in a cost-effective and environmentally sound manner; and educate the public about invasive impacts and control methods. Prohibits Federal agencies from authorizing, funding, or carrying out actions that they believe are likely to cause or promote the introduction or spread of invasive species.	Biological Resources
Georgia Water Quality Control Act (Official Code of Georgia Annotated (OCGA) 12-5-29)	Makes it unlawful to discharge excessive pollutants (sediment, nutrients, pesticides, animal waste, etc.) into waters of the State in amounts harmful to public health, safety, or welfare, or to animals, birds, or aquatic life or the physical destruction of stream habitats.	Water Resources, Human Health and Safety
Georgia Erosion and Sedimentation Act (OCGA 12-7-1)	Provides for the establishment and implementation of a State-wide comprehensive soil erosion and sedimentation control program to converse and protect the land, water, air, and other resources of the State. Exempts commercial forestry activities, including harvesting, from permitting and minimum requirements of the Act, except where harvesting is inconsistent with best management practices (BMPs).	Water and Biological Resources; Air Quality
Georgia Oil or Hazardous Material Spills or Release Act (OCGA 12-14-1)	Requires that, in the event of accidental spills, that the spill be contained, contaminated soils be collected and delivered to approved waste handling facility, and the Georgia Department of Environmental Protection be notified.	Hazardous Materials

APPENDIX C

SCOPING LETTER AND COMMENTS

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File Code: 1950

Date: May 11, 2007

Dear Forest User:

I am requesting comments for the **Suppression of Southern Pine Beetle on the Shoal Creek Ranger District of the Talladega National Forest**. Your specific comments to the proposed actions will help identify key issues and possible alternative ways of meeting the project's purpose and need. The key issues and alternatives will help focus the environmental analysis (effects) of the proposed actions.

Proposed Action(s)

The Shoal Creek Ranger District, of the Talladega National Forest, is proposing to suppress southern pine beetle (SPB) infestations to protect future and current habitat for the red-cockaded woodpecker (RCW). While there is not a current infestation, analysis of how to respond for when the next infestation occurs, will allow for prompt suppression efforts to take place without delay. Each SPB spot will be looked at to determine which of the four options under the proposed action would provide the most timely and effective suppression.

The proposed action includes the following activities:

1. Cut and remove: the infested trees, plus a sanitizing buffer zone, are cut and removed. Vacated trees do not need to be cut. Mechanized equipment would be utilized.

2. Cut and leave: the infested trees and a buffer zone are felled toward the center of the spot and left on the ground. Vacated trees do not need to be cut. Chainsaw felling if not accessible by road, otherwise mechanized equipment.

3. Cut and Spray – infested trees are felled, limbed and cut into workable lengths for spraying. All bark surfaces are sprayed with EPA-approved insecticides. No buffer zone needs to be cut and vacated trees may remain standing.

4. Cut, Pile, and Burn – infested trees are cut, piled toward the center of the spot, and burned until the bark is charred. No buffer zone is needed and vacated trees do not need to be treated.

5. Site prep and replant SPB spots with site appropriate species. (ex. Longleaf pine)

Purpose of the Proposed Action

This action provides an opportunity to follow the guidance of the Revised Land and Resource Management Plan for the National Forests in Alabama. The southern pine beetle is the most destructive insect pest of pine forests throughout the Southern United States. When present in low numbers the beetles attack severely stressed or dying trees and are not of much consequence (a low number means three areas of SPB activity per 1,000 acres). However, during epidemics the SPB attacks and kills even the most vigorous and healthy pine trees (an epidemic means 10 or more areas of SPB activity per 1,000 acres). The proposed control and treatment methods have proven effective at controlling SPB infestations from spreading once control action has been taken. There are no methods that prevent SPB infestations completely (SPB FEIS, 1987).

Implementation of this project would serve several purposes:

- Minimize impacts to the health of the forests.
- Minimize potential impacts to present and future RCW nesting and foraging habitat.

A vicinity map of the project area is enclosed. The project area consists of all pine and pine hardwood stands suitable for timber production. The District has approximately 60,551 acres of these stands which are susceptible host type for the Southern Pine Beetle.

Comments

If you would like to comment on this project, or you would like additional information about this project, please contact the Shoal Creek Ranger District. Pursuant to 36 CFR 215.3 (a-e) (2003) substantive comments must be made during this commenting period to have legal standing for appeal after a decision has been made. Comments must be postmarked or received within 30 days beginning the day after publication of this notice in the Anniston Star. Written comments should be sent to: District Ranger Kimberly Bittle, Shoal Creek Ranger District, Talladega National Forest, Attn: Suppression of Southern Pine Beetle on the Shoal Creek Ranger District of the Talladega National Forest, 45 Highway 281, Heflin, AL 36264. Phone or hand-delivered comments may be made at the Ranger District office at 45 Highway 281, Heflin, AL 36264 (Phone 256-463-2272) within the normal weekday business hours of 7:30 a.m. to 4:00 p.m. Comments may also be E-mailed to this office, in a common word format (without attachments), using the following e-mail address: comments-southern-alabama-shoalcreek@fs.fed.us. In accordance with regulations, all written comments received, including those submitted electronically, will be placed in the project file and will become a matter of public record.

Sincerely,

/s/ Kimberly Bittle
KIMBERLY BITTLE
District Ranger

Comments received:

-----Original Message-----
From: Burns, William CIV USA AMC
Sent: Thursday, May 17, 2007 7:51 AM
To: 'comments-southern-alabama-shoalcreek@us.fed.us'
Subject: SPB Supperssion (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

After reviewing your proposal, I offer the following suggestion and a
comment.

For proposed actions 3 and 4; if no buffer of green trees are removed,please monitor boundaries more frequently than normal. Usually there is more than one generation of beetles in an infested tree. After the first generation exits (exit holes visible) the tree may be fading for a period of time. Another generation may exit later.
Unless you have a reason to leave the exited trees, like a need for snags, I'd suggest to lay all trees in the spot on the ground.

These are just some observations that came up on the 4-Notch SPB area in Texas several years ago and might help in some situations. Thanks for the good work you do in taking care of our National Forests.
Billy Burns

31 May 2007

Ms. Kim Bittle
Shoal Creek District Ranger
Talladega National Forest
45 Highway 281
Heflin, AL 36264

Re: Proposed Action Planning for Southern Pine Beetle Suppression with an RCW Emphasis

Dear Ranger Bittle,

This letter is intended to provide conceptual comments to the U.S. Forest Service in its treatment planning of various proposed actions (none immediately eminent) for Southern Pine Beetle Suppression with an RCW Emphasis on the Shoal Creek Division of the Talladega National Forest and as outlined in the scoping announcement of 11 May 2007.

The Nature Conservancy supports the protection and restoration of the ecological and conservation values on the National Forest parcels and encourages the following considerations in this regard:

- That the implementation of any selected treatments be conducted to exceed approved best management practice recommendations

- Conduct the USFS Staff administration of all contract specifications to emphasize and prevent negative, post-treatment vegetation impacts and assure the highest residual continuity of surface soil and groundcover vegetation

- Assure excellence in protecting residual forest tree conditions, RCW habitat for remaining hardwood and conifer individuals.

- Traditional approaches that you have itemized in planning for the suppression of SPB infestations have included salvage cutting and removal, cutting infested trees plus a buffer zone and leaving these trees in the woods, cutting small numbers of infested trees and applying insecticides, and piling infested material and burning. All of these strategies *except piling and burning* may be appropriate under suitable conditions to prevent SPB infestations from reaching RCW cavity trees. Piling and burning on site can not be supported.

- The term "sanitizing" in reference to buffer area creations from healthy trees is inappropriate. Such discussion may also benefit from describing the metrics associated with area impacted and influenced by your treatments in such buffer harvests.

- The suggested uses of insecticides are non-selective or exclusive to SPB, expensive, provide time limited results, affect multiple organisms and essential biota and can not be supported.

- Verbenone has shown promise as a last resort in high value areas, but may be cost prohibitive at large scales and holds only a short-term promise.

- As important as the tactics you have outlined are in the effort to prevent further decline in RCW populations and habitat, they are not substitutes for well conceived and monitored energetic ecological restoration and long-range management that provides a comprehensive forest environment less favorable to SPB and more favorable to RCW.

- Prompt response to SPB outbreaks is critical to reducing impact, but is likely inadequate unless accompanied by pro-active, synoptic landscape management devised to implement and monitor innovative landscape scale approaches to active manipulating, as well as passively engaging, ecosystem responses and managing forest ecosystems throughout to restore and optimize health and integrity of their native, non-human components in conjunction with providing society periodic material values.

- Proactive and reactive approaches must be integrated to provide effective management of the RCW in montane longleaf pine ecosystem and perpetual SPB influences. Actions # 1 and #2 may be effective options, assuming mechanical equipment oversight in well administered and regulated, ecologically motivated applications.

- Salvage logging of large snags and down boles does not contribute to recovery of late-successional forest habitat; in fact, the only activity more antithetical to the recovery process would be to remove large, surviving green trees from the impact sites. Large snags and logs of decay resistant species are critical as early and late successional wildlife habitat as well as for sustaining key ecological processes associated with nutrient, hydrologic and energy cycles.

- Effectively none of the large snags and logs of decay resistant species can be judged as being in excess of those needed for natural recovery to late successional forest conditions.

- Slow re-establishment of forest cover is common following natural stand replacement events. This circumstance provides valuable habitat and food sources for early successional species, particularly fauna taxa that require snags, downed logs and diverse plant resources and for many ecosystem processes. Fifty or one hundred years for natural re-establishment of forest cover is not particularly a long period; many 19th and 20th century "disturbances" are still not fully restored or recovered.

- In fact, naturally disturbed habitat that is undergoing slow natural reforestation – without salvage or planting – is the rarest of the forest conditions in southern North America. Yet, there is increasing evidence from research that such slowly reforesting of disturbed areas are important elements of regional biological diversity. This is bold and visionary science and contains the hope that both the USFS and the logging industry might learn to slow

down its consumptive, manipulative urgency and proceed more at the magisterial pace of the life of a forest.

- The bottom line for all talk of forest sustainability is holding to an undiminished quality of soil and the maintenance of the entire diverse array of wildlife species in full interaction. In earlier times, no matter what the bug-kills, fires or blow downs, the ecosystem slowly and steadily adapted and recovered. After all, until recent years the entire human project itself was a lot more leisurely and measured. There is an imperative to slow down the contemporary landscape.

- SPB aftermaths should not be used as cover for further logging. What's presented as SPB salvage logging should be prudent, honest, and quick, transparent about its motivations and practices.

- Short-term and long-term habitat management plans will need to be interactively developed to include both immediate actions needed to assure the survival of RCW populations in compliance with Federal guidelines and increase the extent of SPB resistant montane longleaf pine woodlands across the landscape.

- Short-term management plans may be at times of highest priority to address threats to immediate RCW survival. Shoal Creek District is currently addressing this issue at various levels and can be commended for its progressive past effort. Therefore, these should continue to focus on mid-story vegetation control, especially with selective mechanical treatment, increased fire frequency, increased growing season fire applications and basal area adjustments favoring largest diameter (>11 in dbh) and oldest age classes and longleaf pine (or its surrogates) to reduce SPB hazard. Your program for artificial RCW inserts and eliminating cavity competition is favorable as well in this regard.

- Long-term habitat management and well conceived planning across multiple USFS administrative-generations will be more complicated but must contain and receive an urgent priority. With the variation of the historical silvicultural legacies within the Forest, plans for regeneration of montane longleaf pine ecosystems (converting canopy species in many cases) and a structured landscape design to replace foraging and nesting habitat will continue to be critical.

- Design, development, restoration and maintenance of landscape scale corridors (or at minimum physically linking core areas of high quality habitats) should be the foundations of treatment selections, prescription scheduling and implementations to reduce SPB effects. These should perpetually support current RCW populations to develop potential for RCW expansion and eliminate SPB hazards. Maintenance, expansion and creation of continuous habitat corridors must be of conceptual reference for success.

- Fire will be a key to habitat success and system restoration. Frequency is directly correlated to increase in species richness and biodiversity indicators. Seasonal application will be important within the ecological restoration phase and variability will be the emphasis post-restoration. Hardwood mid-story vegetation control is too linked in importance, assuring residual groups and individuals throughout. The developed habitat conditions will need rigorous correlation to time, space and SPB cycles. To be meaningful, management on the ground must integrate conceptual metric targets with

periodic habitat monitoring within a *long-term* adaptive administrative structure to assure planned revision or amendment and responsiveness to ecological conditions, SPB population's changes, other conifer pests and RCW habitat conditions, particularly regarding invertebrate foods.

- An effective Integrated Pest Management for southern pine beetle (SPB) must consist of five components: prevention, prediction, detection, evaluation and direct control. Each proposed action you have outlined should be formally rectified with these elements. Recommendations for improving implementation of a program should include gaining public acceptance for the comprehensive program in addition to simply specific aspects, devising new management strategies, developing area-wide suppression techniques, and coordinating efforts among and across landowners and agencies.

- Severe outbreaks will continue without the rehabilitations of less susceptible forest ecosystem conditions, plus the development of improved prediction, detection, communication and suppression practices.

- Detection: The National Forest Risk system assessing hazard-rate for susceptibility to SPB may be an initial tool in decisions where moderate to extreme hazard stands within one-quarter mile of RCW colonies could increase the probability of beetle infestation in these areas, thus threatening foraging areas and individual colony trees. However, bark beetle activity within RCW colonies (in contrast to foraging areas) does not correspond directly with hazard ratings, suggesting that development of some additional evaluation criteria may be needed for RCW colonies; i.e. to incorporate stand characteristics, disturbances, cavity tree condition, climate and soils and similar issues.

- Southern pine beetles have presumably been an important factor in the dynamics of pine ecosystems in southeastern North America for thousand of years. Population levels are extremely variable in time and space, with number and size of infestation increasing in recent years. Regarding stand gap dynamics and often as prey in healthy RCW habitats, SPB provides useful ecological value, however brief.

- Treatment Decision: The decision on which treatment method to utilize should be based on the size of the infested area, the location, and the stage of the infestation; not broadly established as a landscape template for action. Therefore, each ecological and seasonal condition must be temporally and spatially specific. A decision option to cut the timber and remove it out of the SPB area or in some cases, cut the timber and leave it in the ground should include harvesting a small exacted buffer strip of healthy trees around the infested area to ensure that all the beetle-infested timber is treated.

- The possibility exists that intensified management required to halt RCW population declines may be increasing the likelihood of SPB infestation in active cavity trees, i.e. removal of midstory vegetation, primarily mechanical impacts from heavy equipment and poor operator supervision, resulting soil disturbance, rapid forest structural change and occasional damage to residual trees. *Caution is highly emphasized in this regard*. However, mortality rates of cavity trees may be more determined by the site conditions and population characteristics of SPB in the general forest landscape.

- It appears that you have placed priority on a management solution to the losses, or potential losses, of cavity trees to SPB. It is a shared urgency. SPB infestations involving

multiple trees are amenable to a variety of suppression techniques capable of limiting further spread, excluding proposed actions #3 & # 4, which should not be viable choices and can not be supported here.

- As artificial inserts hold only a short-term promise for RCW and limited assurance for SPB influence, a long-term solution based on the sustainable rehabilitation of the landscape / ecosystem, containing well balanced old age classes of longleaf pine located in high quality core areas effectively linked for expanded corridors, ensuring that RCWs can maintain viable populations and reduce SPB hazards and threats.

- Long-term management strategies must plan and implement for an increasing overall forest health. Longleaf pine, with its well documented resistance to SPB, should be restored to suitable sites. Planned thinning of targeted species or surrogate species to favor large diameter and older age classes should maintain low to moderate pine basal area and provide space for trees to maintain radial growth and vigor resulting in increased resistance to SPB. Such treatments should reflect cautious, well-timed precision within current forest ecological condition. Prescribed fire at natural frequencies and seasons will help maintain an open, SPB resistant stand, reducing excessive biomass, slash and debris which harbor beetle population numbers. When beetle populations are high in an area, activities that may wound, stress or otherwise unfavorably impact trees, such as mechanical logging and even prescribed fire under some conditions, must be avoided in or near RCW colonies and within foraging areas.

- Landscape and forest fragmentations, in addition to creating dispersal and habitat problems for RCW, is documented also to lead to increased bark beetle activity. Therefore, poorly conceived proposed actions, harvesting treatments, clear-cut silviculture and mid-story vegetation manipulations may result in sudden and substantial increase in wind velocity in adjacent areas, resulting in undesirable wind-thrown, damaged root systems and broken residual trees, killing outright or weakening desirable individuals or stands to the point susceptible for increased infestation by various damaging invertebrates (IPS, turpentine beetles etc) and especially increasing SPB risks. Multi-aged, multi-structural management, especially maintaining a continual, but open, canopy cover with irregular variations and representative canopy gaps and connected across wider landscape areas, helps reduce fragmentation, supports retention of RCW habitat cores and balances a reduction of wind or mechanical related trouble; and should be prioritized, long-term. Loblolly and shortleaf pine should be used a temporal surrogates during montane restoration of longleaf / shortleaf pine complexes.

- Regarding Proposed Action #5: without specific pre-treatment descriptions, spacing intended, soil characterizations, landscape context, species other than longleaf pine etc, the Site Preparations and Planting Treatment Projects in areas influenced and impacted by SPB, no supportive comment is given here.

- Education of the public needs to be addressed in a general manner on a broad scale to encourage support needed for funding of RCW recovery and SPB extirpation; And locally, with very specific intentions, to support management treatments necessary to restore and maintain habitat conditions for multiple generations.

- Use all caution in attaching a claim that thinning and selected SPB salvage treatment is responsible for the reduction in the likelihood of future SPB impacts and improved forest

"health". The perception has been exposed that such claims to an implied reduction simply shores up an excuse to cut more trees. It is much more complex than that.

It is encouraging and of note that the Shoal Creek Ranger District is pro-actively initiating the management planning process for RCW habitat in terms of minimizing the potential future threats caused by SPB impacts. We appreciate the opportunity to participate by comment in this planning and look forward to further development of this initiative.

Sincerely,

David

David Borland
The Nature Conservancy

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526

IN REPLY REFER TO:

07-0556

June 1.2007

Kimberly Bittle, District Ranger
USDA - Forest Service
Shoal Creek Ranger District
45 Highway 281
Heflin.AL 36264

Dear Ms. Bittle:

The U.S. Fish and Wildlife Service has reviewed the May 11, 2007, scoping notice for the proposal to suppress southern pine beetle (SPB) infestations on approximately 60,551 acres of the Shoal Creek Ranger District to protect future and current habitat for the red-cockaded woodpecker (RCW). Our comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C 661 et seq.) and Section 7 of the Endangered Species Act (ESA) of 1973, as amended, (16 U.S.C. 1531 et seq.).

We support and encourage your efforts to improve RCW habitat on the District. Our records indicate that the following federally listed species occur near the project area: red-cockaded woodpecker {Picoides borealis), gray bat {Myotis grisescens), blue shiner {Cyprinella caerulae}, fine lined pocketbook [Hamiota alfilfs}, southern pigtoe (Pleurobema georgianum), and the candidate species white fringeless orchid {Platanthera integrilabid). Designated critical habitat for the triangular kidneyshell, Coosa moccasinshell, southern pigtoe, fine-lined pocketbook, southern acomshell, ovate clubshell, southern clubshell and upland combshell also occurs near the project area. Project plans should consider the potential effects to these species.

Appendix D

Response to Public Comments

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The notice for Scoping for the Suppression of Southern Pine Beetle on the Shoal Creek Ranger District of the Talladega National Forest project was published in The Anniston Star on May 16, 2007. During the comment period, three responses were received (shown in Appendix C). This appendix provides the Forest Service's response to those comments. Following direction in 40 CFR Section 1503.4, the ID team has analyzed and carefully considered all public comments received during the review period. All letters, emails, faxes, and comment forms received as public comment on the Scoping Letter were compiled, organized, read, and analyzed by resource specialists located on the Talladega National Forest – Shoal Creek Ranger District and the Supervisor's Office for the National Forests in Alabama.

These specialists used a process known as "content analysis" which allows a systematic review of public comment through the development and use of a database tracking the commenter, and comment topic. The specialists have read all public responses in their entirety and identified discrete comments within these responses. They have related each discrete comment to a particular concern, resource consideration, or proposed management action. Every effort was made to keep each comment within sufficient context that it is a stand-alone statement. The specialists looked for not only each action or change requested by the public, but also the reason(s) behind each request in order to capture the full argument of each comment. Therefore, paragraphs within a response letter may be divided into several comments because multiple arguments are presented, or alternatively, several paragraphs that form one coherent statement may be coded into one comment. While simple statements of opinion without rationale are captured in the process and entered into the database, it is the strength of each rationale as a complete argument that provides the specialist with basis to develop their response.

Some comments may have some relation to the project but are administrative, financial, or process related and, consequently, do not have a cause-and-effect relationship to the project's environmental impacts. Comments that are "out of the scope" of the project may or may not have a cause-and-effect relationship, but decisions related to them are: outside the agency's authority; addressed at the national or forest planning levels and, therefore, not appropriate for examination in a project-level analysis; or below the measurement threshold when compared to larger-scale relationships.

Substantive comments, as defined in, 36 CFR 215.2 are comments that are within the scope of the proposed action, are specific to the proposed action, have a direct relationship to the proposed action and include supporting reasons for the Responsible Official to consider. Most of the comments were supportive in nature and generally supportive comments are documented below as well; and none of the comments resulted in a change to the preferred alternative. No substantive comments were received.

Sub-bullet points (in red) are responses to comments received. These responses in combination with the environmental assessment should clarify all of the points brought up in the comments received.

- That the implementation of any selected treatments be conducted to exceed approved best management practice recommendations.
    - Implementation of suppression activities will be conducted in accordance with forest plan standards as found in the Revised Land and Resource Management Plan for the National Forests in Alabama (2004).

- Conduct the USFS Staff administration of all contract specifications to emphasize and prevent negative, post-treatment vegetation impacts and assure the highest residual continuity of surface soil and groundcover vegetation.
    - The timber sale contract contains numerous clauses that specify acceptable operations. For example, BT6.5 Streamcourse Protection, BT6.6 Erosion Prevention and Control, and BT6.7 Slash Disposal.

- Assure excellence in protecting residual forest tree conditions, RCW habitat for remaining hardwood and conifer individuals.
    - Implementation of suppression activities will be conducted in accordance with forest plan standards as found in the Revised Land and Resource Management Plan for the National Forests in Alabama (2004).

- Traditional approaches that you have itemized in planning for the suppression of SPB infestations have included salvage cutting and removal, cutting infested trees plus a buffer zone and leaving these trees in the woods, cutting small numbers of infested trees and applying insecticides, and piling infested material and burning. All of these strategies *except piling and burning* may be appropriate under suitable conditions to prevent SPB infestations from reaching RCW cavity trees. Piling and burning on site can not be supported.
    - The Final Record of Decision for the Final Environmental Impact Statement for Suppression of the Southern Pine Beetle recommends that the Forest Service "employs all appropriate silvicultural, biological, chemical, genetic, and mechanical tactics" when dealing with pine beetle outbreaks. Piling and burning was one of the suppression methods approved in the Final Record of Decision for Suppression of the Southern Pine Beetle FEIS 1987. This document gives regional direction. This method would not be used in RCW colony sites.

- The term "sanitizing" in reference to buffer area creations from healthy trees is inappropriate. Such discussion may also benefit from describing the metrics associated with area impacted and influenced by your treatments in such buffer harvests.
    - We maintain ongoing dialog with Forest Health staff, who conduct site visits and advises the district on buffer recommendations based upon SPB activity.

- The suggested uses of insecticides are non-selective or exclusive to SPB, expensive, provide time limited results, affect multiple organisms and essential biota and can not be supported.
    - The Final Record of Decision for the Final Environmental Impact Statement for Suppression of the Southern Pine Beetle recommends that the Forest Service "employs all appropriate silvicultural, biological, chemical, genetic, and mechanical tactics" when dealing with pine beetle outbreaks. There is currently not an approved insecticide for suppression of SPB in the Southern Region, but if one does become approved during the life of this project, there are specific circumstances, such as recreation areas and RCW clusters, where its limited use could be very effective. While we agree the chemical treatment is expensive and its application is difficult because every surface of the tree must be coated, it is effective with limited site disturbance. In small spots in these areas, its use may actually be more efficient than bringing in mechanical equipment to remove the trees and may achieve the desired outcome more so than other methods.

- Verbenone has shown promise as a last resort in high value areas, but may be cost prohibitive at large scales and holds only a short-term promise.
    - Basically the same as above on the pesticides. There are negatives to pheromones and because of that, pheromone protection and suppression techniques would only apply under direct supervision of the FPM or related researchers. Since this is a developing science, the inclusion permits incorporation of advancements as they occur with limited additional analysis, and is therefore appropriate to include.

- Prompt response to SPB outbreaks is critical to reducing impact, but is likely inadequate unless accompanied by pro-active, synoptic landscape management devised to implement and monitor innovative landscape scale approaches to active manipulating, as well as passively engaging, ecosystem responses and managing forest ecosystems throughout to restore and optimize health and integrity of their native, non-human components in conjunction with providing society periodic material values.
    - This was addressed in the Revised LRMP January 2004 for National Forests in Alabama. Pg 2-11 FW-6 "The Integrated Pest Management (IPM) approach will be used to manage pest populations, such as SPB. IPM is a decision-making and action process that includes biological, economic, and environmental evaluation of pest/host relationships to manage pest populations. Forest Health Protection Unit will be consulted when significant pest problems occur."

- Salvage logging of large snags and down boles does not contribute to recovery of late-successional forest habitat; in fact, the only activity more antithetical to the recovery process would be to remove large, surviving green trees from the impact sites. Large snags and logs of decay resistant species are critical as early and late successional wildlife habitat as well as for sustaining key ecological processes associated with nutrient, hydrologic and energy cycles.
    - SPB can substantially alter a forest and negatively impact recovery of RCW. In 1986, on the National Forests in Texas, an uncontrolled SPB infestation occurred on National Forest land. Without immediate suppression activities, this one spot, grew to over 10,000 acres in one year and crossed on to private lands as well. Habitat and colonies for the endangered RCW were also lost. More recent outbreaks in Alabama resulted in the loss of natural pine components on 20,000 – 30,000 acres, and in Kentucky the small residual population of rcw was lost along with their habitat. Even with large investments and use of extraordinary measures it is unlikely this species could be returned to its natural range in Kentucky over a lifetime.
    - In Section 4(d)(1) of the National Forest Management Act, Congress directed that suitable lands within the National Forest system be stocked with appropriate species to secure maximum benefits of multiple use sustained yield management. Section 6(3)(E)(ii) provides that harvested lands should be restocked within 5 years.
    - Section 3.3.7 of the Record of Decision of the Final Environmental Impact Statement for the Management of the Red-Cockaded Woodpecker and its Habitat on National Forests in the Southern Region provides specific guidelines for protection of habitat from SPB infestations. This document directs the National Forests to "Minimize the potential impact of the southern pine beetle through thinning and prompt control actions." Section 4 of the document outlines foraging and regeneration standards and states that the successful regeneration, growth, and development of adequate numbers of pine trees is essential to long

term habitat for the RCW. The document also emphasizes the restoration of longleaf pine, when regenerating within suitable RCW habitats. The RCW recovery plan mandates the suppression of SPB to protect RCW habitat.
    - Generally vacated trees would not be removed unless safety or other documented considerations warrant. Regardless of the suppression method employed, vacated trees adjacent to existing roads or trails would be felled due to the severe safety hazard these dead trees pose. These stems would be left on site unless the stem is a merchantable component of a "cut and remove" operation. Scattered large hardwoods and well-formed smaller hardmast producers would be maintained on all sites, either as a single tree or as clumps in accordance with the Forest Plan. At least 2 snags will be retained per acre for habitat in accordance with the Forest Plan.

- In fact, naturally disturbed habitat that is undergoing slow natural reforestation – without salvage or planting – is the rarest of the forest conditions in southern North America. Yet, there is increasing evidence from research that such slowly reforesting of disturbed areas are important elements of regional biological diversity. This is bold and visionary science and contains the hope that both the USFS and the logging industry might learn to slow down its consumptive, manipulative urgency and proceed more at the magisterial pace of the life of a forest.
    - Prior to settlement, there was estimated to be more than 90 million acres of contiguous pine forest distributed across the southeastern United States. Since that time, the landscape has been dissected by roads and development and conversion to other land uses, greatly reducing the habitat that exists for endangered species such as the RCW to survive in.
    - SPB can substantially alter a forest and negatively impact recovery of RCW. In 1986, on the National Forests in Texas, an uncontrolled SPB infestation occurred on National Forest land. Without immediate suppression activities, this one spot, grew to over 10,000 acres in one year and crossed on to private lands as well. Habitat and colonies for the endangered RCW were also lost. More recent outbreaks in Alabama resulted in the loss of natural pine components on 20,000 – 30,000 acres, and in Kentucky the small residual population of rcw was lost along with their habitat. Even with large investments and use of extraordinary measures it is unlikely this species could be returned to its natural range in Kentucky over a lifetime.
    - Suppression activities and restoration are necessary to meet the legal obligations of management on public lands and to provide the greatest benefit to the public over the long run. This is also required under the RCW recovery plan which is enforceable under the Endangered Species Act.

- Short-term and long-term habitat management plans will need to be interactively developed to include both immediate actions needed to assure the survival of RCW populations in compliance with Federal guidelines and increase the extent of SPB resistant montane longleaf pine woodlands across the landscape.
    - The Forest Plan and the RCW Recovery Plan specify the guidelines by which management activities take place.

- Fire will be a key to habitat success and system restoration. Frequency is directly correlated to increase in species richness and biodiversity indicators. Seasonal application will be important within the ecological restoration phase and variability will be the

emphasis post-restoration. Hardwood mid-story vegetation control is too linked in importance, assuring residual groups and individuals throughout. The developed habitat conditions will need rigorous correlation to time, space and SPB cycles. To be meaningful, management on the ground must integrate conceptual metric targets with periodic habitat monitoring within a *long-term* adaptive administrative structure to assure planned revision or amendment and responsiveness to ecological conditions, SPB population's changes, other conifer pests and RCW habitat conditions, particularly regarding invertebrate foods.

- The above statement is beyond the scope of this project.

- An effective Integrated Pest Management for southern pine beetle (SPB) must consist of five components: prevention, prediction, detection, evaluation and direct control. Each proposed action you have outlined should be formally rectified with these elements. Recommendations for improving implementation of a program should include gaining public acceptance for the comprehensive program in addition to simply specific aspects, devising new management strategies, developing area-wide suppression techniques, and coordinating efforts among and across landowners and agencies.
    - This environmental assessment is prepared in accordance with the Council of Environmental Quality regulations for implementing the National Environmental Policy Act. An interdisciplinary team process was used to formulate and analyze issues, alternatives, and environmental effects in this environmental assessment. A list of team members is included in the environmental assessment. As a cooperating agency, the United States Fish and Wildlife Service was consulted for a review of the "Proposed Actions" and alternatives and the associated Biological Evaluation. The public was given the opportunity to be involved in the decision making process during the scoping period. A scoping notice was published in the Anniston Star and also mailed to persons who had previously expressed interest in activities on the National Forest.

- Severe outbreaks will continue without the rehabilitations of less susceptible forest ecosystem conditions, plus the development of improved prediction, detection, communication and suppression practices.
    - The above statement is beyond the scope of this project.

- Detection: The National Forest Risk system assessing hazard-rate for susceptibility to SPB may be an initial tool in decisions where moderate to extreme hazard stands within one-quarter mile of RCW colonies could increase the probability of beetle infestation in these areas, thus threatening foraging areas and individual colony trees. However, bark beetle activity within RCW colonies (in contrast to foraging areas) does not correspond directly with hazard ratings, suggesting that development of some additional evaluation criteria may be needed for RCW colonies; i.e. to incorporate stand characteristics, disturbances, cavity tree condition, climate and soils and similar issues.
    - The above statement is beyond the scope of this project.

- Treatment Decision: The decision on which treatment method to utilize should be based on the size of the infested area, the location, and the stage of the infestation; not broadly established as a landscape template for action. Therefore, each ecological and seasonal condition must be temporally and spatially specific. A decision option to cut the timber and remove it out of the SPB area or in some cases, cut the timber and leave it in the

ground should include harvesting a small exacted buffer strip of healthy trees around the infested area to ensure that all the beetle-infested timber is treated.

- The decision on which treatment method to utilize will be based on numerous factors, such as slope, access, visual quality, size of the infested area. This decision will be made based upon a site specific evaluation of the infested area. The inclusion of a buffer in the treatment is outlined as a part of the proposed action.

- It appears that you have placed priority on a management solution to the losses, or potential losses, of cavity trees to SPB. It is a shared urgency. SPB infestations involving multiple trees are amenable to a variety of suppression techniques capable of limiting further spread, excluding proposed actions #3 & # 4, which should not be viable choices and can not be supported here.
  - This is not a substantive comment.

- As artificial inserts hold only a short-term promise for RCW and limited assurance for SPB influence, a long-term solution based on the sustainable rehabilitation of the landscape / ecosystem, containing well balanced old age classes of longleaf pine located in high quality core areas effectively linked for expanded corridors, ensuring that RCWs can maintain viable populations and reduce SPB hazards and threats.
  - The above statement is beyond the scope of this project. This project does not address artificial inserts, natural cavities or other aspects of strategic planning. It addresses only limiting and replacing losses to critical habitat.

- Long-term management strategies must plan and implement for an increasing overall forest health. Longleaf pine, with its well documented resistance to SPB, should be restored to suitable sites. Planned thinning of targeted species or surrogate species to favor large diameter and older age classes should maintain low to moderate pine basal area and provide space for trees to maintain radial growth and vigor resulting in increased resistance to SPB. Such treatments should reflect cautious, well-timed precision within current forest ecological condition. Prescribed fire at natural frequencies and seasons will help maintain an open, SPB resistant stand, reducing excessive biomass, slash and debris which harbor beetle population numbers. When beetle populations are high in an area, activities that may wound, stress or otherwise unfavorably impact trees, such as mechanical logging and even prescribed fire under some conditions, must be avoided in or near RCW colonies and within foraging areas.
  - This project is intended to address suppression and restoration of active infestations, and is not intended as a strategic plan, which is out of its scope. See below.

- Landscape and forest fragmentations, in addition to creating dispersal and habitat problems for RCW, is documented also to lead to increased bark beetle activity. Therefore, poorly conceived proposed actions, harvesting treatments, clear-cut silviculture and mid-story vegetation manipulations may result in sudden and substantial increase in wind velocity in adjacent areas, resulting in undesirable wind-thrown, damaged root systems and broken residual trees, killing outright or weakening desirable individuals or stands to the point susceptible for increased infestation by various damaging invertebrates (IPS, turpentine beetles etc) and especially increasing SPB risks. Multi-aged, multi-structural management, especially maintaining a continual, but open, canopy cover with irregular variations and representative canopy gaps and connected

across wider landscape areas, helps reduce fragmentation, supports retention of RCW habitat cores and balances a reduction of wind or mechanical related trouble; and should be prioritized, long-term. Loblolly and shortleaf pine should be used a temporal surrogates during montane restoration of longleaf / shortleaf pine complexes.

- The above statement is beyond the scope of this project.

- Regarding Proposed Action #5: without specific pre-treatment descriptions, spacing intended, soil characterizations, landscape context, species other than longleaf pine etc, the Site Preparations and Planting Treatment Projects in areas influenced and impacted by SPB, no supportive comment is given here.
    - Reforestation prescriptions are described on pages 9 – 16 of the environmental assessment.

- Education of the public needs to be addressed in a general manner on a broad scale to encourage support needed for funding of RCW recovery and SPB extirpation; And locally, with very specific intentions, to support management treatments necessary to restore and maintain habitat conditions for multiple generations.
    - The above statement is beyond the scope of this project. Neither this project nor NEPA are intended to be an educational initiative.

- Use all caution in attaching a claim that thinning and selected SPB salvage treatment is responsible for the reduction in the likelihood of future SPB impacts and improved forest "health". The perception has been exposed that such claims to an implied reduction simply shores up an excuse to cut more trees. It is much more complex than that.
    - This project proposal is intended only to address the suppression and restoration of SPB spots when they occur. While there is no question that thinning can improve forest health, a major factor in risk, and suppression in both healthy forests can limit losses until natural controls provide balance, all aspects of Forest Management are temporal on some scale. This project is intended to reduce catastrophic loss to a limited resource. All other aspects, though applicable in the longer term, are out of the purpose and scope.